Railway Age

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A Remarkable Public Service

THE work which the St. Louis Southwestern has done in the eradication of malaria in the communities served by its lines, as described in an article appearing elsewhere in this issue, is an outstanding example of public service. The territory traversed by the Cotton Belt has long been subject to malaria and the vitality of many of the people resident along its lines has been materially reduced as a result of this disease. The Cotton Belt, in common with other employers, has suffered from the inroads of malaria through the reduced vitality of many of its men, through the disorganization of forces resulting from temporary absences due to sickness and because of the reluctance of many people to remain in that area. In an effort to reduce this drain on its revenues, the road undertook a scientific study and attack on this problem which soon extended beyond the right-of-way to the neighboring communities which have benefited as much as the railways. Largely as a result of the demonstration afforded by the Cotton Belt, many of the communities themselves have now undertaken civic programs of a similar character and malaria is now well under control in many of them. The leadership afforded in this instance reflects credit on the Cotton Belt, on those officers responsible for the inauguration of this program and on the railways as a whole, for it is another indication of the community of interest that prevails among the railways, their employees and the communities which they serve and from which they derive their revenues.

Average Freight Rates Continue to Decline

REFERENCE often has been made in trade reviews recently to the fact that commodity prices are declining, but note has seldom been taken of the fact that freight rates are declining with prices. In the first seven months of this year the average rate per ton per mile was the lowest it has been in any corresponding period since 1921, and in July it was the lowest in any July since 1921. Average revenue per ton per mile in the first seven months of 1925 was 1.102 cents and in the corresponding months of 1926, 1.089 cents. The difference may seem small, but when it is applied to the 243 billion ton-miles of traffic handled it is found that it saved the shipping and consuming public, and cost the railways, $31,600,000. The advance in rates made in 1920 was not in effect in the first seven months of that year, but was in full effect throughout the corresponding months of 1921. The average rate per ton per mile in the first seven months of 1920 was .970 cent and in the corresponding months of 1921, 1.264 cents, an increase of .294 cent. The average rate per ton per mile in the first seven months of 1926 was .175 cent less than in 1921. What these figures mean is that the average rate per ton per mile was increased almost 3 mills by the advance in rates made after the railways were returned to private operation, and that about 1¾ mills, or 60 per cent, of the advance then made has since been taken away by the general reductions and innumerable readjustments of rates that have been made during the last five years. The commodity price index of the Bureau of Labor Statistics shows that in September, 1926, the average wholesale price of commodities was 50½ per cent greater than in 1913. The average revenue per ton-mile of all the Class I railways in July, the latest month for which the statistics are available, was 49½ per cent higher than in 1913. The average wholesale price of farm products in September was only 41 per cent higher than in 1913, but the July average rate per ton per mile of the railways of western territory, where most of the complaint about freight rates on farm products has been made, was only 34½ per cent higher than in 1913.

Give the Facts When You Have Them Available

F. H. HARDIN, assistant to the president, New York Central, in his address at the September meeting of the New York Railroad Club, not only paid a fine tribute to the accomplishments of that branch of the engineering profession engaged in railroad and railroad supply work, but he also brought out pertinent facts pertaining to the proper functioning of an engineering department which may be applied quite as well to other departments. According to Mr. Hardin, "the chief function of an engineering department is the development of truth; beyond that, engineering is generally a matter of common sense and judgment, for, given the *facts*, a decision is usually a simple matter." In other words, engineering is based on fact information. The engineering is not the only department of a railroad the successful functioning of which is a matter of common sense and judgment requiring facts. Other branches of the mechanical department, for example, can use facts to good advantage, especially when requested by the management to take action to correct some trouble which comes under its jurisdiction. The executive sometimes has facts available that would be of material assistance in obtaining speedy action but which he neglects to furnish. To illustrate, a railroad president recently had occasion to call the attention of his superintendent of motive power to an epidemic of rough train handling. No specific cases were cited. Considerable of the rough handling might have been done by switch engines when coupling or uncoupling cars or it might have been at a certain station along the line where the conditions for train handling were such as to require special study. The

omission of specific instances of rough handling, of course, necessitated a more lengthy and possibly a more expensive investigation on the part of the mechanical department than would have otherwise been necessary. The appeal made by Mr. Hardin in his address, an abstract of which was published in the October 9 issue of the *Railway Age*, for a better understanding of railway equipment problems can undoubtedly be emphasized by many mechanical department officers with examples similar to the one just cited. A more sympathetic understanding and reciprocal co-operation on the part of those who utilize the services of the mechanical department, such as the furnishing of available facts, will accomplish much toward more efficient railroad operation.

Fast Freight First

THE other morning, about a mile outside of a busy passenger terminal through which passes a large volume of suburban business, there was observed one of the rush-hour express suburban trains stopped for several minutes at a junction while a freight train proceeded over the crossovers tying up all four tracks at that particular point. The freight train consisted of refrigerator and live poultry cars. Upon inquiry, it developed that it was one of the road's fastest high-ball or manifest trains. It was found also that the towerman in giving the freight train precedence had done some careful figuring, because the passenger train was able to make up the slight delay and arrived on time. The point is that the towerman had been so impressed by his superiors with the importance of the manifest freight's being on time that he had done every little bit in his power not to delay it an unnecessary second. Perhaps the story might be made even more pointed were it added that at this same tower on occasions—rare of course—through passenger trains are sometimes held up for suburban trains. It probably could not be said that any road with any respectable passenger business gives as much care to its fast freight trains as to its passenger trains. However, it is a fact that many roads are today making excellent records with fast freight services; such trains can be kept on time on an exacting schedule only if the entire organization is keyed up to a high standard of performance. Indeed, there are many observers of railroad operation who contend that there are really no statistics or figures that form an index of a railroad's operating efficiency nearly as adequate as the degree of skill with which time freights are scheduled or handled generally. The fast freight services are in many respects the big thing in railroading today. Is it not surprising how little is said about them and how relatively little recognition is accorded to their great importance?

Up-to-Date Shop Methods

RAILROAD general officers, for obvious reasons, seldom spend much time visiting locomotive or car repair shops, and consequently they have little personal knowledge of shop details. Probably it would be a good thing if they did have more first-hand information regarding some railroad shop practices which, in efficiency, lag seriously behind similar work in other industries. They might then lend a more sympathetic ear to the shop officer who needs new tools to raise the standard of work in his shop. Under the highly competitive conditions in modern business, any industrial organization which does not keep up to date in its machinery and methods soon passes out of the picture, but railroad shops are not forced to compete for business, and the incentive to cut shop costs has not in the past proved adequate to force the replacement of old machines and methods by those which are more modern and efficient. This replacement has taken place in some shops which equal some of the best modern industrial shops in equipment and methods. Other railroad shops, often on the same road, however, still adhere to the old methods. How otherwise can one account for a 500 per cent difference in the cost of locomotive classified repairs per mile which exists at the different shop points on one of the largest systems at the present time. Grinding is only one example of a machining operation less extensively used in railroad shops than is desirable. Grinding machines have been developed which are capable not only of finishing but roughing operations, and practically no one denies their value for such work as truing worn piston rods, valve stems, guides, car wheels and many other parts. The grinding equipment of some shops, however, is still limited to small tool grinders. Active encouragement and assistance of railroad officers of all ranks are necessary to raise the standard of shop practice, especially at points which in the past have been more or less neglected.

Modern Maintenance Facilities Prove Value

WITH but one classified repair shop for locomotives, two shops for freight cars and nine enginehouses and running repair points, the Kansas City Southern spent $318,229 for new machines, excluding power plant machinery, in the last five years. As pointed out by M. A. Hall, superintendent of machinery, in an address before the International Railway General Foremen's Association at Chicago recently, the modernization of repair facilities on the Kansas City Southern has not only increased shop production directly but has also resulted in other important benefits. The maintenance cost per mile has decreased from 36.6 cents in 1923 to 29.8 cents in 1925, accompanied by an improvement in the quality of the work and general standards of maintenance, as shown by an increase of 47 per cent in the number of miles per engine failure over the best previous record. Mr. Hall credits improved shop facilities for these records in the following words: "Our supervision is practically the same and our mechanics are perhaps less experienced than those employed prior to 1922. The fact remains that the greatest factor has been in the carrying out of a program of providing better shops, enginehouses, machines and tools." The importance of good machines in making satisfied operators and reducing labor turnover is pointed out in the following comment: "Is it any wonder that costs should be high in smoky shops and enginehouses where the pits are usually knee deep with water and where the failure to provide good machines or mechanical devices exasperates the worker?" The railroads need modern cars and locomotives, but there is a point, unfortunately now reached on many roads, beyond which the ratio of equipment to maintenance facilities may not be increased if the railway is still to secure anticipated economies in operation from the purchase of new equipment.

The Railroads "In Politics"

UNITED STATES Senator George W. Norris of Nebraska recently asserted that "the railroads are now in politics and have always been in politics." The *Railway Age* admits this, but means something quite different from what Senator Norris means. He added that "the best way to take them out of politics is to operate a government owned system."

What Senator Norris means by his charge is that the railways are in politics trying to control nominations and elections of public officials, and thereby public policies. This is not true. The railways were in politics in this way until about twenty years ago. They are not now and have not been for a long time. They learned so well that being in politics in this way was bad for them that they got out and have stayed out as much as they could.

And yet, in a way, they are "in politics." They are there because men like Senator Norris and former Senator Brookhart constantly drag them in. The determination of the value of property long has been held by the courts to be a judicial matter. Valuation of the railroads has been delegated to the Interstate Commerce Commission subject to review by the courts. But Brookhart and others try to make it a political question. Brookhart is galloping over Iowa now trying to get himself elected senator by charging that the Interstate Commerce Commission in 1920 placed upon the railroads a valuation of 19 billion dollars when their "market value," measured by the prices of the securities, was only 12 billion. He demands political action to reduce the valuation. When the railways answer his wild misrepresentations men like Senator Norris charge them with being "in politics."

The regulation of rates is a quasi-judicial function which has been delegated by Congress to the Interstate Commerce Commisison. Senator Gooding of Idaho does not like the attitude of the commission toward the fixing of rates where the question of allowing a lower charge for a longer than a shorter haul is involved. He therefore introduces a bill to deprive the commission of its present discretionary authority and provide that the railways shall never charge a lower rate for a longer than for a shorter haul to meet water competition. He stirs up a great agitation in the western inter-mountain territory in favor of his bill. The railways oppose it in the press, in public addresses and in testimony before congressional committees. Does this take them into politics? In a way, yes. Senator Gooding having made a political question of long and short haul rates and having tried to get political legislation regarding them, it can hardly be denied that the railways are "in politics" when they oppose the proposed legislation.

The situation with respect to the passenger "surcharge" is similar. The Interstate Commerce Commission, after thorough judicial investigation and consideration, upheld the surcharge as reasonable. Immediately an organization of commercial salesmen got a bill introduced in Congress to overrule the commission and abolish the surcharge. They used political influence in support of it. The members of Congress who favored it did so for political reasons. A law abolishing the surcharge would be political measure. The railways have opposed such legislation. This must put them "in politics," because when a certain kind of regulation of rates is made a political question those who oppose as well as those who advocate it must be "in politics."

We would like, however, to ask politicians like Senator Norris how the railways can keep out of politics if politicians persist in dragging important questions of railway regulation into politics. Of course, the officers of the railways can refrain from saying or doing anything to influence the decision reached by the public and the action taken by Congress regarding such questions as the valuation of railway property and the earnings the railways may make. But for them to do so would be to fail to perform a plain duty to their security owners and the public. They would fail to perform a duty to the public because the public cannot decide intelligently on any question unless it has presented to it all pertinent information and arguments.

What has been said throws much light on Senator Norris' plan to take the railways out of politics by government ownership. Under government ownership Congress would have to either delegate the management of the railways to some such body as the Interstate Commerce Commission and give it almost autocratic authority, or settle by legislation the capital expenditures the railways should make, the wages they should pay, the rates they should charge, the way they should distribute freight cars, and so on. Which policy would Congress adopt?

With the government actually owning and operating the railways the direct pressure put upon Congress by different classes of people—employees, shippers, travelers,—and by different communities and territories—eastern, southern, western, New England, the western inter-mountain territory, the Pocahontas region and the Pacific coast—to regulate wages, rates and service as they wanted them regulated would be many times greater and take many more forms than it does now. Congress is constantly threatening even now, the use of pressure of different classes and territories, to adopt political regulation. This is why the railways are "in politics" to whatever extent they are. Is it conceivable that the railways would be in politics less when they were owned by the government, and therefore could be used in innumerable ways for political purposes by the party, classes or territories that happened to have the most political power at the time?

When Senator Norris says, "The best way to take them out of politics is to operate a government owned system," he shows either that he has forgotten the kind of government we have in the United States, that he lacks the power of reasoning, or that he is devoid of a sense of humor. To substitute government ownership for government regulation and private management as a means of taking the railways out of politics would be like rescuing a man from an April shower and dropping him in mid-ocean to save him from drowning.

Spring Switches or Switch Machines with Remote Control

AN increased tendency to use spring switches in main line tracks, was evident from the discussion at the recent convention of the Signal section, A.R.A. in Los Angeles, Calif. Although spring switches have been used successfully for years on street car systems and in some cases on high speed electric lines, the earlier types which were tried out on steam roads were discarded. More recent developments incorporating an oil or air buffer have, however, met with satisfactory operation in a limited way. One road, the Atchison, Topeka & Santa Fe, which has given much attention to spring switch apparatus, has used one or more in the main line for over ten years and is now making more installations, all of which include automatic block signal protection. The

Union Pacific and the Chicago & North Western also reported a limited use of spring switches.

One member of the Signal section expressed the conclusion that the use of spring switches should be limited to simple layouts at the ends of double track or at the leaving end of passing tracks where no special signaling would be required on the siding, while another member explained a special layout of signaling designed for use with spring switches. One road has experienced trouble on account of part of the weight of a locomotive coming on the points before they are forced over, while another operating officer reported three cases in which trains were stopped while pulling out of a spring switch, which resulted in splitting the trains when backing up, although such a movement is prohibited by rule.

On account of the relatively low cost of a spring switch installation, about $290 for the apparatus at the switch, it is quite likely that the possibility of their use will be investigated by many roads. Therefore, it is well to consider that spring switches are being used primarily with low-speed movements on grades in simple layouts where a moderate amount of traffic is handled. At a point anywhere near an existing operator's office it seems to be the conclusion of the majority that a switch machine with proper signaling, controlled remotely from the nearest operator, will give more flexible and safer operation. In other words, the spring switch, as such, has a place but it by no means should be considered as a substitute for a remote control switch machine layout which locks up the switch, and provides indication of its position. Where high speed movements are made and where confusion of routes is likely to occur, this precaution is especially to be considered.

Younger Railroad Men's Movement

SELDOM has a new idea gripped railroad officers and employees more quickly or more thoroughly than the so-called younger men's movement, started a few years ago by the Railroad Y. M. C. A. That organization had previously confined its efforts very largely to the needs of operating department employees and almost entirely to the adults. A number of years ago it began to recognize its responsibility for the boys and young men in railroad service, as well as boys in communities which were largely made up of railway employees. The problem was approached in different ways in several places, but the idea which finally promised to give the greatest and most practical results was an adaptation of the American Employed Boys Clubs to railroad conditions. The purpose of such clubs, in a large way, is to interest the young men themselves, and their superiors as well, in promoting programs looking toward the all-around development of the young men, thus making them more valuable citizens and more intelligent workers.

The so-called AREB Clubs were started in a number of places—the first one in 1919—and were responsible to a great extent for the call for the first national Younger Railroad Men's Conference, which was held at St. Louis in 1923, in connection with the tri-ennial conference of the Railroad Y. M. C. A. It was frankly in the nature of an experiment. The expectation was that similar conferences might be held jointly with the tri-ennial conventions of the Railroad Y. M. C. A. The first meeting at St. Louis, however, met with such an enthusiastic reception on the part of the younger men that they insisted that at least for the time being the younger men's conferences should be held annually. The fourth one of these will be held in Omaha next month.

While the AREB Clubs were largely responsible for the annual Younger Railroad Men's Conferences, the national meetings have stimulated a greater and wider interest in the AREB Clubs, as well as in other organizations of the younger railroad men. This is clearly indicated in an article in this issue on American Railway Employed Boys Clubs, by John H. Henry. Many railroad officers are keenly interested in this movement and are more or less enthusiastic about the practical results which have thus far become evident. In the first place, officers and supervisors have been more fully awakened to their responsibilities in the matter of more careful selection and training and coaching of the boys and young men under their direction. The young men, on the other hand, have gained a much clearer and higher appreciation of the opportunities in the railway field and are facing their life work in a far more intelligent and enthusiastic way. They are showing considerable ability in building up the programs for their clubs and organizations and are developing much initiative in this and other respects. This means that the busy railroad officer and foreman does not have to take on a lot of additional detail work in stimulating an interest in these things on the part of the boys and young men, but that by wise counsel and coaching, they can have a very great influence on the younger men in helping them to "learn to fly."

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Complete Chronological List of All Decisions of the Supreme Court of the United States in which Each and Every Part of the Interstate Commerce Act Has Been Construed, compiled by Arthur Gusack. Citations to related acts included. 13 p. Pub. by author, Washington, D. C., $2.

The Human Adventure, by James H. Breasted and James Harvey Robinson. The sections of volume 2, "The Ordeal of Civilization" by Prof. Robinson, on the introduction of steam engines and the consequences will be of especial interest. Both volumes present human history from an unusual point of view. 2 volumes. Pub. by Harper & Bros., New York City. $10.

Improving Human Relations in the Transportation Industry, by A. J. County. What the Pennsylvania Railroad is doing. Pennsylvania Railroad Information, Oct. 1926. 12 p. Pub. by Pennsylvania Railroad, Philadelphia, Penna. *Apply.*

The Overland Mail, 1849-1869, by LeRoy Hafen. "Promoter of settlement, precursor of railroads." A volume for those interested in the history of communications. 362 p. Pub. by A. H. Clark Co., Cleveland, Ohio. $6.

Periodical Articles

Collegiate Education for Business in Germany, by August Wilhelm Fehling. Courses on transportation, p. 589. Journal of Political Economy, Oct. 1926, p. 545-596.

Employee Representation on American Railroads, by Elva M. Taylor. American Federationist, Sept., 1926, p. 1103-1108, Oct., 1926, p. 1201-1217.

General Lee and a School of Commerce, by C. S. Marsh. Included courses in transportation, (p. 658) and was suggested to trustees of Washington and Lee University in 1869. Journal of Political Economy, Oct., 1926, p. 657-659.

Mexican West Coast Vegetable Exports to United States. Compiled from consular reports by Foodstuffs Division, Department of Commerce, and shows the growth of this traffic for several recent years. Commerce Reports, Oct. 11, 1926, p. 83-85.

Malaria Is No Longer a Menace on the Cotton Belt

Work of sanitary engineering staff reduces hospital cases 97 per cent in nine years

By H. W. Van Hovenberg

Sanitary Engineer, St. Louis Southwestern, Texarkana, Texas.

A REDUCTION in the number of employees admitted to the hospital for malaria from 100 per thousand in 1917 to 3 in 1925 is the outstanding achievement of the sanitary engineering department of the St. Louis Southwestern in the nine years since its organization. This, however, comprises only a portion of its work for it has inaugurated a campaign for more efficient sanitation of stations which

Spraying Oil Over Stagnant Water

has raised the average rating of all stations from 54.0 to 84.7 with practically no expenditure by enlisting the interest and co-operation of the agents. By similar measures, the condition of the section houses has been raised from an average of 50.9 to 79.2. The improvement of the appearance of the station grounds, the inspection and certification of drinking water supplies, the supervision of the cleaning of passenger equipment, and a wide variety of laboratory analysis work are other activities of the sanitary engineer.

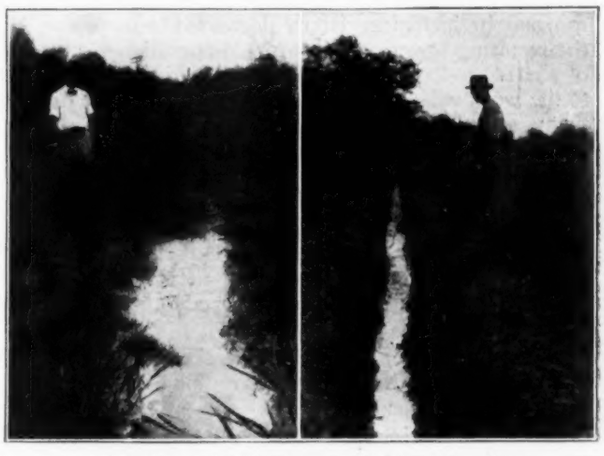
The Railroad and Malaria

The St. Louis Southwestern operates 1,748 miles of lines southwest from St. Louis through Missouri, Arkansas, Louisiana and Texas with 160 agency stations serving towns ranging from a few hundred population to cities such as St. Louis, Memphis, Little Rock, Pine Bluff, Shreveport, Waco, Ft. Worth, and Dallas. With the wealth of natural resources found in this territory, and the further advantage of long growing seasons and plentiful rainfall, these cities and towns are growing rapidly. Practically 70 per cent of the road's tonnage in 1925 was products of agriculture, mines and forests and 53 per cent of the total tonnage originated on its lines.

In contrast with this wealth, the long growing season and plentiful rainfall are responsible for an enormous problem for the sanitary engineer, brought about chiefly by the abundant opportunities for mosquito breeding. This is true of both cities and rural districts. The resulting malaria is a decided handicap to both industrial and agricultural development wherever steps have not been taken toward mosquito control. The larger cities and towns are fairly well advanced in sanitation, but the smaller towns and rural districts have yet to solve their problems of water supplies, sewage disposal, milk and mosquito control, and other health protective measures.

Sanitary Engineering Department Established

As early as 1916 the St. Louis Southwestern employed between 6,000 and 7,000 men, a large proportion of whom were recruited from the adjoining rural districts where the malaria rate was high. This was particularly true of track department employees which are usually recruited from rural districts. Many others, such as bridge and building men, necessarily worked in



A Typical Ditch Before and After Cleaning

the river bottoms, while the two large system shops were located in cities having high malaria sickness rates.

In the fall of 1916 Edwin Gould, chairman of the board of directors, visited the company hospital at Texarkana, Ark., and found from the hospital records that one-third of the medical cases treated in the hospital were for malaria. This high malaria rate was not peculiar to the Cotton Belt alone as studies of other railroad hospitals in contiguous territory show almost identical rates. The seriousness of malaria among employees can be better appreciated when we add to this hospital rate three or four times as many malaria suffer-

ers who were treated either by local surgeons, or who treated themselves. Such a sickness rate during the season of increased railroad activities could not help but be reflected in reduced man-power earnings. After consulting government and other malaria specialists, Mr. Gould established a trust fund to be used for the eradication of malaria on the Cotton Belt and on July 1, 1917, the position of sanitary engineer was created among the general officers of the road. The present sanitary engineering department on the Cotton Belt, which has in its personnel, besides the writer, an assistant sanitary engineer, a chemist, an entomologist, a malaria technician, sanitary inspectors, and a gardener is an outgrowth of this pioneer work in railroad malaria control engineering.

Malaria is by far the biggest health problem of the South. It has been rated by the late Dr. H. R. Carter, past assistant surgeon general, U. S. Public Health Service, as far more serious than typhoid, dysentery, pellagra, and tuberculosis combined. Malaria is a mosquito-borne disease and is carried from man to man by the female of the species known as the anopheles.

The Railroad's Program

The Cotton Belt's malaria program was planned to give relief to both employees and dependents and to further joint mosquito eradication campaigns in cities and towns served by the railroad. Briefly, the methods employed were: (1) The eradication of mosquitoes by drainage and oiling. (2) The proper screening of living quarters to prevent access of infected mosquitoes to well persons. (3) Quinine prophylaxis. (4) Education.

When malaria control work was inaugurated on the Cotton Belt, the aid of the U. S. Public Health Service was enlisted and surveys made of various shop and division points where large numbers of employees and dependents lived, and of a number of important industrial cities and towns suffering the same loss as the railroad in inefficient labor, decreased man-power, and the resulting lowering output. Co-operation in the form of sharing in expense and in giving engineering direction to the work was offered by the railroad to these cities and towns and the work of draining, oiling, and filling commenced.

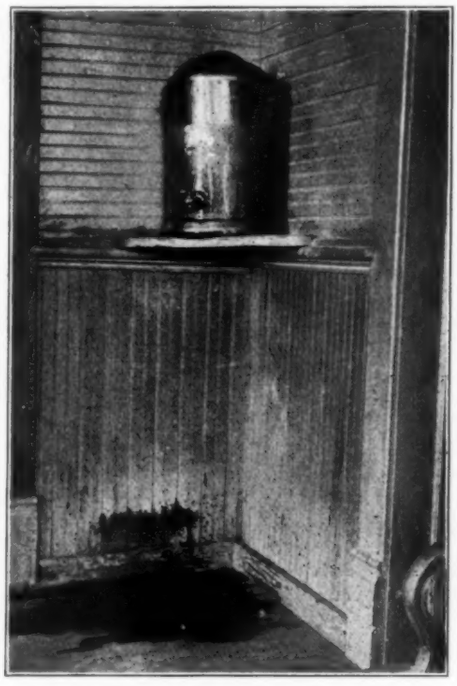
These towns scattered over the St. Louis Southwestern Railway System have now assumed the entire cost of malaria control work, but where necessary the railroad continues to offer expert advice in effecting more economical control methods and assists them by furnishing a mixture of crude and headlight oil from the oil tank car it maintains.

Specifications for screening have been adopted by the railroad and all replacements are made in accordance with these specifications.

Since the major part of the malaria work in the various cities and towns is now a regular part of their civic programs, our energies during the past few years have been concentrated on the protection of maintenance of way employees. During 1925 a total of 74,441 quinine capsules were distributed at 30-day intervals over a total of 945 miles. Records indicate that 87.8 per cent of this quinine was taken. The effectiveness of quinine as a prophylaxis is reflected by the decrease in the hospital malaria admission rate from 215 per 1,000 section men in 1913-1916 (prior to malaria control) to less than 2 per 1,000 section men in 1925. The following table compares the hospital malaria admissions for the years 1921, 1922, 1923, 1924, and 1925 with the four years (1913-1916) prior to malaria control work:

Class of employees	Average 1913-1916	1921	1922	1923	1924	1925
Section men	258	80	24	16	13	3
Extra gang men	134	12	43	21	13	8
Bridge and building men	89	30	10	11	2	4
Shopmen	73	10	6	10	3	3
Trainmen	27	9	2	6	1	0
Station men	13	5	8	0	1	1
Yardmen	4	2	0	0	1	1
Division office men	1	0	1	4	2	0
Miscellaneous men	3	5	4	2	7	2
Total	602	153	98	70	43	22

It has been our practice during the past five years to search out employees suspected of suffering with malaria, who are urged to go to the company hospital for treatment and rest. When discharged from the hospital these men are given enough quinine to complete the 60-day quinine treatment. The inspectors in the sanitary engineering department keep in close touch with these men and urge them to complete their quinine treatment, and from time to time take blood specimens for examination in the malaria laboratory. This laboratory



A Leaking Water Cooler Will Soon Destroy Floor

service is an essential part of our program. With each successive year more employees come voluntarily for blood examination for malaria.

Early in our campaign we realized that education of the people must go hand in hand with any successful pioneering in sanitary engineering activities. There are still far too many people who believe and maintain that malaria is obtained from sleeping in the night air, or by eating too much watermelon, or by drinking water with scum on it.

Institute Educational Campaign

In order to tell the story of the cause and prevention of malaria in the railroad's educational campaign, an elaborate exhibit car was equipped and put on the road in 1919. This car housed models showing the characteristics of different mosquitoes, of good and poor farm drainage, of proper and improper methods of building stock ponds, of the right and wrong methods of screening houses, and of various other features in connection with mosquito control. This car visited every city and

town on the lines in the malaria territory and the exhibit was either set up in the public schools or the school children invited to visit the car itself. This educational program was supplemented by a state-wide malaria essay contest for cash prizes donated by Mr. Gould.

The net result of the railroad's malaria program since its inception in 1917 has been the lowering of the general hospital admission rate for malaria from 100 per thousand men employed to less than 3 per thousand men, together with the stimulation of mosquito eradication work in St. Louis Southwestern cities and towns having an estimated combined population of over 600,000. In Texas the population under mosquito control includes 95 per cent of the Cotton Belt's employees. Not only has this pioneering work on the Cotton Belt resulted in so much good to its own employees and increased operating efficiency and industrial stimulation, but it has been the means of furthering this character of work in many other cities and on other railroads.

Station _____ Competition No. _____

Final Score _____ Inspection No. _____

Inspector _____ Agent _____ Date _____ Hour _____

ST. LOUIS SOUTHWESTERN RAILWAY LINES

OFFICE OF SANITARY ENGINEER

RAILWAY STATION SANITARY SCORE CARD

	UNIT			UNIT			UNIT			UNIT			Unit No.	Outside Station Layout—Etc.			
	Busily Dirty	Stained	Total	Busily Dirty	Stained	Total	Busily Dirty	Stained	Total	Busily Dirty	Stained	Total			Max. Remarks	Remarks	Score
Floor	14	12												Station (outside) Dirty	20		
Walls	10	8												Steps Dirty	15		
Wainscoting	10	8												Bulletin Boards Dirty	8		
Ceiling	6	4												Mail Box	2		
Doors	10	6												Lights	10		
Transoms	6	4												Semaphore	2		
Windows	11	9												Freight Platform	10		
Screens	11	9												Trucks	4		
Odor	10													Station Platform Untidy	20		
Untidy	20													Privy Path Obstructed	5		
Other														No Night Soil Box	10		
Total Housing														No Flap on Privy	5		
														No Lock on Privy or W. C.	15		
Furniture	11	5												Odor of Privy or W. C.	5		
Cuspidors	6	5												Water Bbls. need Lime	15		
Refuse Cans	9	4															
Seats (wait. rm).	12	5												Total			
Water Cooler	8	3															
Store	5	5												Note Special Conditions and Explain Below			
Coal Bin	3	2												Bad Drainage—Under Station—Platform—Drives			
Lights	6	4												Roof Gutters—Broken—Clogged			
Signs and Posters	6	4												Platform—Rough—Weedy—Needs Repairs			
Parcel Lockers	4	2												Station—Outbuildings—Need Paint—Repairs			
Telegraph Apparatus	2	1												Park Needs Attention			
Mail & Phone Box	2	1												Toilet Fixtures—Leaking—Out of Order			
Shelves, Counters	8	4												Hydrants—Water Coolers—Leaking			
Partitions	6	2												Signs—Posters to be Removed—Station—Premises			
Platform Scales	2	1												Company Material Piled on Premises			
Closets	6	2												Safety or Fire Hazard Needs Attention			
Fire Apparatus	2	1												Hotel Runners—Service Cars Encroaching			
Other														Other			
Total Fix. & Furn.														Other			

Remarks:

Stations' Sanitary Score Card

Station Sanitation Has Also Been Undertaken

In the fall of 1919, the management of the St. Louis Southwestern decided to pay more attention to the cleanliness of its stations. Various methods in use on a number of railways were studied. In each instance the cost was thought to be prohibitive since the lowest estimate was upward of $80,000 per year to provide any regular system of cleaning.

As the railroad was at this time employing several sanitary inspectors during the malaria season of the year, the suggestion was made that these men be employed throughout the year, under the direction of the sanitary engineer, in developing a clean station campaign, this campaign to be based on creating a desire on the part of the station agents for clean stations, rather than the adopting of a program by the company which would call for the expenditure of considerable money.

This "Clean Station Campaign" was launched in January, 1920. The program was:

(1) To have clean stations every day of the month by securing and maintaining the friendly rivalry of agents in competing for awards of merit, based on the cleanliness of their stations.

(2) To prevent station fires through proper care of flues and stove piping; through proper storage of inflammables; by ridding the station premises of rubbish, litter and trash, and the accumulation of years of obsolete station junk.

(3) To prevent accidents by the removal of and the forbidding of the placing of materials about station grounds that might obscure the approach of trains.

(4) To secure for the railroad the good will of the traveling patrons of the road by having clean waiting room and toilets for their accommodation; in other words, the favorable advertising of the road by its patrons.

(5) To protect company freight, particularly perishable commodities, from rats.

(6) To promote station efficiency by teaching agents and their forces the value of keeping station material in its place.

(7) To create a spirit of loyalty to the company's interest on the part of the agents, by their making minor repairs to station property, and by their preventing patrons from abusing the physical property about the station and grounds.

Those familiar with railroads will recognize at once the countless ways in which station property may be destroyed, as for example by a small leak in a station water cooler which will eventually rot out the station flooring and sills, necessitating the calling of a bridge and building gang to repair the damage. Roof leaders are continually being broken at the ground, permitting the rush of water during rains to destroy gravel or chat platforms, and dislodge bricks in permanent platforms. The arms of a station seat may become loosened and finally broken, and protruding screws possibly tear the clothing of patrons. Water from the station coolers and sinks frequently discharges under the station, keeping the sills moist and aiding in their destruction. This condition is also favorable for the breeding of mosquitoes. The careless handling of live coals not only injures the floors to the point where they must be replaced, but may be responsible for the loss of a station by fire. The promiscuous tacking of placards on both wooden and plaster walls is destructive. Screen doors and windows are continually in need of minor repairs.

There is probably greater abuse to railway station toilets than any other part of the station equipment. In most instances the station toilets are public conveniences and it is usually the townspeople and not the railroad patrons who misuse these facilities and who resent it when the agent keeps the toilets locked except prior to the arrival of trains. It is not unusual to find lanterns, electric lamps, plumbing fixtures, and padlocks stolen, and even privy doors torn from their hinges. For the railroad there is practically no relief from such depredations. It may be that the Southern states will some day follow the lead of certain others in requiring incorporated cities to maintain public comfort stations. It is not improbable in the meantime to think that we may have railways and cities co-operating in the building of comfort stations maintained by municipal appropriations. Certainly cities have much to gain in knowing that their patrons have access to clean toilet facilities.

The basic principle of the "Clean Station Campaign" is enlisting the good will of the agents to maintain their station and premises in good or fair shape throughout the entire year with their own forces and with no increased cost to the company. To systematize the work and equalize the chances of both the large and small stations obtaining comparable station sanitary scores, a score card was devised to record the sanitary rating of the various units of the station, both interior and exterior. On this score card the different units such as waiting rooms, office, express room, freight room, and the toilets are assigned "weights" according to their value from a sanitary standpoint.

To stimulate the interest of the agents when the campaign was first launched, trophy cups were donated by four directors of the road and offered as division prizes. As interest in the campaign grew, additional prizes were offered until today the trophy cups have been replaced by vacations with pay and substantial cash awards for system records.

It is interesting to note that prizes are not awarded in our "Clean Station Campaign" for the highest scoring station, but for the greatest per cent of improvement made in successive competition periods. By means of a scoring chart every station is put on an equal basis and the measure of any agent's work is found by comparing his actual increase with what is set for him to do according to the graph. If he makes his prescribed increase he is given a judging per cent of 100. Any station may attain a judging per cent of over 100 by making more than the required points and conversely.

On the first inspection of stations the average sanitary score of all stations was 54.0. By the end of 1920 the average score had increased to 70.3 and today it is 84.7. Our records show that in 1920 the lowest scoring station on the system had a sanitary score of 11.0, while for the first period of 1926 the lowest score assessed against any station on the system was 68.3. The following statement

Department _____ No. _____ Extra Gang _____
Foreman _____ Located at _____
Commissary Clerk _____ Cook _____
Waiter _____ Inspected by _____
Date _____ 192 No. of men in camp _____

- CONDITIONS FOR WHICH COMPANY COMMISSARY IS RESPONSIBLE -

EQUIPMENT:	PER FECT:	ALL-OWED:
(a) Cond. of premises(5)__(Absence of com.& kitchen refuse)		5
(b) Cleanliness of floors(5) tabs.(5) benches(3) walls(1) ceil.(2) wind.(1)		17
(c) Storage facilities for food supplies (10) (Refrigerators, flour and meal bins, food protected from weevils and rats in store car)		10
(d)Condition of condiment containers (3)		3
(e)Cond. of implements & utensils for cook.(5) serving(5)		10
(f)Lavoratory facilities (5)		5
(g)Dish washing facilities (5) (Hot water boiler)		5
QUALITY OF FOOD:		
(h)Quality of food supplies (10)		10
HANDLING AND PROTECTION:		
(i)Personal cleanliness of employes (5)		5
(j)Handling of food supplies (Preparation (10) (serving(5)		15
(k)Absence of flies (10) insects and rodents (5)		15
(due to doors NOT standing open: if flies present due to defective screens, so note in this space)		100

- CONDITIONS FOR WHICH RAILWAY COMPANY IS RESPONSIBLE -

EQUIPMENT:	
(a)Condition of floors(5) tables (5) benches(5) walls(5) ceiling(2)	20
(b)Light(5) ventilation(5)	30
(c)Cond.of screens over doors & windows & spgs.on doors (15)	15
(d)Water tight roofs (10)	10
(e)Lavatory facilities (10)	10
PHYSICAL CONDITION OF WATER SUPPLY:	
(f)Approved source (10)	10
(g)Condition of tube (cleaned as required(5) portection against contam.(5)	10
(h)Method of handling water from tanks (10)	10
PREMISES:	
(i)Condition of premises (5)	5
	100

(Waste Paper, clothing and other refuse around bunk cars and right of way)
REMARKS:

Sheet for Noting Conditions in Camp Car Food Inspection

shows the results that have been obtained in the "Clean Station Campaign" during the past five years:

Summary of System Average Station Sanitary Scores

	First Score 1920	Final Score 1920	Final Score 1921	Final Score 1922	Final Score 1923	Final Score 1924	Final Score *1925	First Score 1926
Average....	54.0	70.3	81.2	82.3	82.6	83.8	82.8	84.7

* A new and more rigid inspection score card was put in use in 1925 which accounts for the apparent decrease that year.

Dining Car Department Boards Extra Gangs

Early in the malaria control work we used extra gangs which were moved from town to town in drainage and oiling work. During this period we had ample opportunity to learn from experience what it cost to feed our own labor properly in contrast to the high prices and unsatisfactory living conditions on many of the other extra gangs. The continued complaints of extra gang laborers led the company, on March 1, 1921, to contract for boarding service with one of the large boarding contractors. Then in turn the extra gang foremen took occasion to complain of this service, and bitterly so because they lost such lucrative incomes from boarding and other deductions. The continued turmoil led to this department beginning the inspection of eating and sleeping conditions on all of our extra gangs. Inspection score cards similar to the illustration were adopted which relegated to the company and to the boarding contractor their respective responsibilities toward the extra gangs as a whole, the company being responsible for the physi-

cal condition and upkeep of the cars and the boarding contractor responsible for the sanitary condition shown on the score card. In the fall of 1922 we recommended that the dining car department of the St. Louis Southwestern take over the boarding of extra gang labor, since the company had accumulated practically all of the culinary and sleeping equipment necessary to equip all of the extra gangs during the shopmen's strike that same year. This change was made in the spring of 1923. Since then there has been a general improvement in both the physical and sanitary condition of our outfit cars since the original scoring. The net result of our own company running the extra gangs is that the dining car department is showing a net return each year and the boarding car situation is entirely satisfactory. We plan to put into operation several recreation cars during this season as a means of securing a better quality of labor on our gangs. We have no regular inspection periods, but each division inspector makes this score as often as he passes boarding cars in connection with his other regular duties.

Section House Improvement Campaign

The improvement of section house premises on the St. Louis Southwestern began in the spring of 1921 with a three-fold purpose in view; first, and most important, being the conservation of company property; second, that of stimulating home building and securing greater contentment among track department employees as an aid in reducing turn-over, and third, as a beginning of a general plan of beautification of all company property including station grounds and right-of-way in and about cities, shops and terminals, all as a valuable medium of advertising to the traveling public. The beginning of this improvement campaign embraced a stretch of 186 miles over which there was a decided lack of interest on the part of section house occupants, and on which there was a continual changing about of foremen. The plan of the campaign was to first get the premises in a neat and tidy condition. This included taking down dilapidated fences and out-buildings, removing trash and litter, moving wood piles to inconspicuous places, and building clothes lines, all in accordance with a standard plan. This preliminary clean-up was followed by terracing, leveling, and sodding of heretofore grassless yards, it being our policy to stress well-kept lawns as the first essential in beautification. Next came the planting of trees and shrubbery, and the building of trellises, sidewalks and driveways. Practically all of this improvement work was done by the foremen on their own time and at their own expense.

This experiment in 1921 proved so satisfactory that we were authorized to extend the program over the entire system with the result that the average improvement score of our section house premises today is 79.2 compared with the original first score of 50.9. Some of our section homes have won prizes in their communities in the state and city "Better Homes Contests." The result of the improvement campaign, aside from the pronounced interest in maintaining real homes that anybody could be proud of, has been a decided lowering in the turn-over of section foremen, and an almost unbelievable decrease in the destruction of company property as compared with the days when our section houses were little more than shelters and certainly when they bore no resemblance to real homes. An example of the willingness of the foremen to participate in this contest is their building over 1,500 ft. of concrete sidewalk in 1925 with their own funds. The company on its part has provided many of

STATION	NAME:	DATE:	INSPECTOR:
SCORE	PHYSICAL (100)		
1ST	End	Company's Responsibility:	REMARKS:
		A. Dwellings & Structures 80.	
		I Repairs:	
		1 Siding	
		1 Chimney	
		1 Porch & Steps	
		1 Foundation	
		1 Roof	
		1 Privy	
		1 Yard Fences	
		1 Door	
		3 Door Screens	
		1 Windows	
		3 Window Screens	
		2 General Repairs	
		II Paint:	
		1 Dwelling	
		1 Yard Fence	
		1 Privy	
		TOTAL COMPANY'S RESPONSIBILITY	
		Foreman's Responsibility 60	
		B. Dwellings & Structures	
		I Repairs:	
		2 Doors	
		4 Windows	
		8 Window Screens	
		8 Door Screens	
		4 Water Supply	
		7 Temporary Fence	
		8 Garage, Wood Shed, Chicken House	
		5 Gates	
		6 Walks	
		4 Drives	
		2 Gutters & eaves	
		4 Yard Fences	
		II Paint	
		10 Temporary Fences	
		10 Garage, Wood Shed, Chicken House	
		TOTAL FOREMAN'S RESPONSIBILITY	
		BEAUTIFICATION 100	
		C. Walks & Drives	
		5 Not Defined	
		5 Size & Arrangement	
		D. Lawns	
		10 Surface	
		10 Drainage	
		10 Sodding	
		10 Uncut Grass and Weeds	
		E. Planting	
		10 Trees	
		10 Shrubbery	
		5 Vines & Trellises	
		5 Flowers	
		F. Tidiness	
		20 General Tidiness	
		TOTAL BEAUTIFICATIONS	
		G. ADDITIONAL MERITS OR DEMERITS	
		GRAND TOTAL SCORE	

Chart for Scoring Section Houses

How the Home Life of a Section Foreman Was Made More Attractive; the Section House at Louisville, Ark., Before and After Improvement

the section premises with different varieties of fruit trees, has made a renewed effort to keep the premises in a good state of repair, and has provided electric lights, city water, sleeping porches and bathrooms for quite a number of the section homes. Cash prizes and vacation leaves are given foremen and their families winning highest places in this contest, and the roadmaster making the greatest per cent improvement on the Arkansas and Missouri and on the Texas lines is sent to the convention of the Roadmasters' and Maintenance of Way Association.

One outgrowth of the section house improvement campaign has been that of parking and landscaping about the more important passenger stations and terminals over the system. As might be expected the many years of abuses of station premises in many towns resulted in very unsightly station surroundings and in almost every case in encroachments on the property itself. The station improvement work was fostered in a large part by co-operation offered the railroad by civic associations, and, from a small beginning made in 1922, twenty-two station properties have been improved by building driveways, concrete or improved walks, and the planting of shrubs and trees grown in the company nursery at Pine Bluff, Ark.

The Laboratory Renders Valuable Aid

In 1922 the first survey of the St. Louis Southwestern's locomotive boiler water situation was made by a chemist employed in the sanitary engineer's office. In 1924 the railroad adopted a policy of boiler water treatment, wherever required, and the first four lime-soda plants were constructed in 1925. The 1926 budget provides for the treatment of a number of other boiler water supplies so that by 1927 the bad boiler water condition will be entirely eliminated.

The outgrowth of the first simple water laboratory has been the gradual building and equipping of a physical, chemical, and bacteriological laboratory at Mt. Pleasant, Texas.

A sanitary and bacteriological survey of the drinking water supplies serving all section houses on the Texas lines was made in January, 1924. Of the 67 supplies, only 25.4 per cent could be classed as safe, including even those served from municipal supplies. Following the survey, standard plans were prepared and A. F. E.'s submitted for reconditioning all section house water supplies. Several well supplies were abandoned and city water secured. After the rebuilding of the wells and cisterns these supplies were chlorinated and retested bacteriologically after a time interval, so that today we are reasonably sure of safe supplies for our section forces. As a means of standardizing the cleaning of passenger equipment at cleaning terminals, a sanitary car-cleaning score card was devised in 1924 and inspections made by division inspectors at intervals sufficiently frequent to keep this work up to a fair standard. Except where required by law, deodorizing devices were removed from equipment and buildings in line with modern sanitary practice and emphasis placed on having cleaning done with soap and water in such a manner that it was not necessary to disguise poor cleaning work with deodorants. The sanitary engineering department has co-operated with other departments on the railroad in handling insects in boarding cars, and with county officials in the control of an acute grasshopper invasion in 1925 over parts of the Texas lines. In this last work we developed a method of control which was quite effective by applying hot atomized oil on our right-of-way as a check control with the ordinary poison bran method.

CAR CLEANING SCORE

Car Number _____ Going Out on Train No. _____

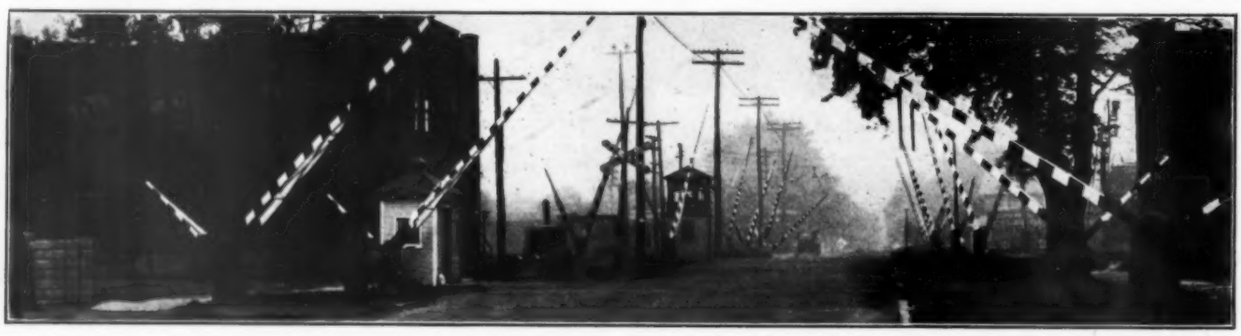
Inspection Made At _____ By _____

Cleaned At _____ On _____ By _____
Foreman

	Item Value	Score Given
A. FLOORS (20)		
1. Isle Carpet	5	
2. Bare Floor	15	
B. WALLS (13)		
3. Heater Units	5	
4. Window Sills	3	
5. Walls	3	
6. Mouldings	2	
C. Ceilings (5)		
7. Mouldings	2	
8. Ventilators	3	
D. Seats (20)		
9. Headrests	5	
10. Chair arms	5	
11. Chair Cushions	5	
12. Chair Framework	5	
E. Toilets (17)		
13. Hoppers	7	
14. Wash Bowls	7	
Paper racks not full, other parts	3	
F. Vestibules (5)	5	
G. Equipment (13)		
15. Cuspidors	5	
16. Lamps	1	
17. Luggage Racks	2	
18. Drinking Founts	5	
H. Windows (7)		
19. Sash Window	3	
20. Storm Window	3	
21. Curtain	1	
Special Notes		
Grand Total Score	100	

Record Sheet for Checking Car Cleaning

Other activities of the sanitary engineer looking toward the comfort and protection of employees include the inspection of food and quarters furnished extra gangs, the proper heating and ventilation of offices where numbers of employees are working, the regulation of the cleaning of offices, and the encouraging of better living conditions.



A Few Crossing Gates

Crossing of the D. T. & I. at Oak Street, Wyandotte, Mich. Three Unnamed Crossings in the background.

Atlantic Coast Line Finds Profit in Reclaiming Materials

Savings approach $3,000,000 *annually—Welding popular—Purchases reduced*

Upper—Waycross Scrap Plant from New Gantry•Crane
Lower—The Last of a Boiler at Rocky Mount

DURING recent years and particularly during the last two, the Atlantic Coast Line has been crediting its operating expenses with substantial savings from reclamation. In 1924, the authorities reported a saving of $1,968,951 and in 1925, the total was $2,775,019 or $806,067 larger than for the previous year, while the figures for the first four months of the present year indicate an equal or greater saving for 1926. The credits to the various operating expense accounts for the 12 months ending December 31, 1925, as determined by the supply department and accepted by the accounting department are disclosed in the table.

These savings are partly the result of bookkeeping, but the bookkeeping is also part of this road's reclamation story. The facts are that the Atlantic Coast Line has launched an intensified program of waste prevention, having as its immediate aim the conservation of material and as its basic aim reduced costs for purchasing and handling. The plan is that no material will be scrapped which can again be rendered serviceable at a reasonable cost. In the pursuance of this plan the whole system of accounting for repairs has been revised extensively. A record is kept of every item of material handled from the time it becomes involved in reclamation operations until its return to stock. All such material that is returned to stock, serviceable as well as repaired material, is designated as reclaimed material. It is then taken into stock at the price of new material and is issued at this price. The extent to which the scrap value of the material and the cost of repairs differ from the price new is designated a saving, which is then applied as a credit or deduction on the monthly operating expenses of the department getting the material. Thus the figures for 1925 signify that during that year there was taken back into the supply department stock a quantity of repaired material which would have cost $2,775,000 more to buy than it actually cost to repair, not counting overhead.

This road has long been alive to the folly of indiscriminate discard of worn materials and in keeping with it has supported reclamation activities of noticeable proportions. In the mechanical department the repairing of worn or broken parts and tools, as distinguished from their mere replacement has been commonplace. There has never been a time, for instance, when lathes have not been busy resurfacing tires, when soldering irons were not working on punctured and broken tinware, etc. It has been commonplace to find this department engaged in the work of cutting and rethreading bolts, and its facilities have also been employed, although to a limited extent, in the upkeep of maintenance of way supplies.

Insofar as such work was done before, the Atlantic Coast Line's reclamation plan involves nothing new

mechanically. Approximately 40 per cent of the savings reported for 1924 and 1925, or approximately $800,000 per year, represents the economy from repair work familiar to the property but which it has not been the practice previously to account for in this manner. To this is added an additional percentage for what might be called deferred reclamation, which covers similar materials which were accumulated in a general and comprehensive clean-up of the system, carried out in 1924. The remainder, conservatively estimated at 50 per cent, denotes progress.

Stores Reclaim Track Material

This progress in reclamation is divided broadly in two aspects, first in the increased attention given in all directions to enlarging normal reclamation work and second to an increased utilization of the acetylene flame and the electric arc. A system reclamation plant for roadway materials, operated under the jurisdiction of the stores department, became a force during this period. This shop, which is located at Savannah, Ga., originated in July, 1915, when a single man on the storekeeper's force was supplied with a hand forge and a few hand tools and

RECLAMATION CREDITS TO OPERATING EXPENSE ACCOUNTS
12 MONTHS ENDING DECEMBER 31, 1925

Bridges, Trestles and Culverts	287.32
Other Track Material	18,347.93
Crossings and Signs	38.88
Station and Office Buildings	204.17
Fuel Stations	2,727.50
Signals and Interlockers	26,135.99
Road Machines - Repairs	243.46
Small Tools and Supplies	7,190.44
Total Maintenance of Way	55,175.69
Shops and Enginehouses	71.46
Shop Machinery	915.88
Steam Locomotives - Repairs	351,640.58
Freight Train Cars - Repairs	2,174,774.26
Passenger Train Cars - Repairs	165,456.39
Work Train Cars - Repairs	603.08
Expense - Shop	5,536.90
Material Store Expense	20.00
Total Maintenance of Equipment	2,699,018.55
Station Supplies and Expenses	5,277.24
Other Supplies for Yard Locomotives	35.25
Enginehouse Expense	37.62
Lubricants for Train Locomotives	413.34
Other Supplies for Train Locomotives	972.21
Train Supplies and Expenses	14,032.60
Stationery and Printing	17.16
General Office Supplies and Expenses	40.00
Total Transportation	20,825.42
Grand Total	2,775,019.66

put at work repairing scales, copy presses, trucks, track drills and track jacks. During the next 10 years this force was only increased to four men, but on July 1, 1925, an organization of 12 men was created and additional equipment was provided, including oxy-acetylene and electric welding apparatus. This plant is still small and unpretentious but in the last 10 months ending May 1, 1926, was engaged in the repair of a wide range of articles, which are reported to have been reclaimed at a saving of $31,051 not counting interest on the small investment. The materials involved in this work and the methods of computing the savings are shown in one of the accompanying tables.

Manganese Frogs Welded

Emphasis is laid on the frog and switch work being done at this point. The repair of open hearth equipment by oxy-acetylene has been followed for several years. Last February the repairing of manganese equipment was launched as a further venture in reclamation. The facilities comprise a frame shed between two tracks which is equipped with electric lights and work benches, electric welding and oxy-acetylene outfits. Here a force of four men build up frogs and the ends of switch points and other worn surfaces. Worn angle bars are also built up in this shop. The production of the first 10 months was 166 frogs, shown in the table, and 85 switch points, the former including 16 manganese frogs. The total saving reported on frogs and switch points, not including overhead, was $12,852. Much of this material, including six manganese frogs, has been in service for several

TABLE NO. 2 - MATERIAL RECLAIMED BY STORES DEPARTMENT
10 months ending May, 1926

Description of Article	Number Article	Scrap Value	Value of Material Used	Value of Labor	Total	Value New	Amount Saved
Derailers	32	16.56	1.18	57.85	77.59	571.20	493.61
Frogs	166	1131.78	1416.79	3234.82	5783.39	13478.65	7695.26
Switch points	85	302.65	300.75	770.73	1374.13	6531.25	5157.12
Connecting rods	141	17.34	2.61	62.40	82.35	482.96	400.61
Switch Stands	327	265.46	1556.39	873.29	2695.14	6998.30	3403.16
Derail stands	19	5.70	3.49	72.41	81.60	186.20	104.60
Angle bars	1485	875.48	753.26	1207.83	2836.57	4552.46	1715.89
Track spikes (Kegs)	86	99.00	1.01	66.84	166.25	363.00	196.75
Adzes	186	4.65		36.00	40.65	151.80	111.15
Lining Bars	277	30.47	35.86	118.28	184.31	423.81	238.50
Claw Bars	109	15.26	26.23	66.78	108.27	219.09	110.82
Scythe blades	383	5.75		25.00	31.75	398.32	366.57
Track chisels	634	19.02	14.39	226.00	259.41	606.28	346.87
Track drills	23	7.36	169.02	122.69	299.07	655.50	356.43
Post-hole diggers	16	.48	1.20	7.20	8.88	15.04	6.16
Track gauges	83	2.12	9.22	20.50	31.84	92.75	60.91
Lag hooks	180	4.50	115.74	21.60	141.84	343.80	201.96
Cant hooks	25	.63	1.44	7.20	9.27	47.50	38.23
Rush hooks	242	4.84	49.39	45.20	99.43	271.46	172.03
Tie hooks	81	6.48		29.20	35.68	113.40	77.72
Track jacks	788	257.51	2382.78	985.33	3625.62	6158.65	2513.03
Track levels	128	.84	9.37	52.36	62.57	277.76	215.19
Spike Mauls	1199	59.95	2.00	233.12	295.07	816.74	521.67
Picks	419	17.40		46.80	64.20	172.10	107.90
Shovels	379	11.37	52.50	111.10	174.97	318.36	143.39
Track wrenches	876	11.04		44.00	55.04	155.83	100.79
Hand car wheels	67	12.06	68.54	90.00	170.60	402.00	231.40
Platform scales	5	7.50	17.49	26.00	50.99	310.00	259.01
Axes	44	1.10		15.60	16.70	36.95	20.25
Mail Cranes	9	13.74	2.83	28.00	44.57	207.00	162.43
Signal Case	32		1.65	7.20	8.85	48.00	39.15
Heaters(Coal & Wood)	65	42.10	500.11	130.31	662.52	949.70	287.18
Marker Lamps	408		563.41	332.93	896.34	2995.62	2099.28
Switch Lamps	218		487.05	241.95	729.00	1963.50	1234.50
Eng.Class Lamps	12			5.96	5.96	117.00	111.04
Lantern Frames	616		159.61	43.70	203.31	447.13	243.82
Copy presses	6	8.34	34.30	23.34	65.98	144.00	78.02
Safes	6	8.00	6.39	65.26	79.65	238.47	158.82
Cook stoves	4	5.92	36.39	27.56	69.87	153.00	83.13
W. H. Trucks	93	46.12	89.09	209.00	344.21	868.00	523.79
Bridge Jacks	6	1.20		18.48	19.76	48.00	28.24
Journal Jacks	11	1.68	33.94	11.48	47.30	177.15	129.85
Screw Wrenches	97	5.78	1.08	56.40	63.26	198.44	135.18
Pipe Wrenches	214	8.88	.56	88.00	97.44	384.96	287.52
"S" Wrenches	118	3.13		35.20	38.33	99.17	60.84
Rail Tongs	18	1.80	.28	8.60	10.68	25.20	14.52
Mattocks	32	1.12		7.70	8.82	16.00	7.18
TOTAL		3344.39	8907.04	20007.60	32259.03	85311.51	51051.48

This report should be mailed to the General Storekeeper, Wilmington, N. C., not later than 5th of the following month.

Storekeeper.

months under the observation of the engineering department.

Less Material Reaches Scrap

While the growth of the roadway plant is a feature of this company's recent reclamation activities, it is in connection with the mechanical department material, however, that the big savings from reclamation come. Much of this work originates with the supply officers whose instructions are explicit and whose aims are high.

TABLE NO. 3 - FROGS RECLAIMED BY STORES DEPARTMENT
10 months ending May, 1926

Description of Article	Number Article	Scrap Value	Value of Material Used	Value of Labor	Total	Value New	Amount Saved
60 lb rigid	3	13.44	22.40	49.70	85.54	148.50	62.96
70 lb "	9	38.71	91.88	135.77	266.36	487.00	220.64
80 lb. "	1	5.42	14.54	18.50	38.46	53.10	14.64
85 lb. "	2	12.11	17.50	43.20	72.81	122.85	50.04
100 lb. "	4	30.32	39.61	87.50	157.43	288.80	126.37
70 lb. spring	7	35.92	43.69	141.43	221.04	504.00	282.96
85 lb. "	121	847.10	998.90	2294.23	3140.23	9851.25	5711.03
100 lb. "	3	25.50	37.50	54.69	117.49	271.65	154.25
60 lb. Mang. center	1	6.00	6.08	31.52	43.87	89.50	45.93
70 lb. " "	2	13.50		18.60	32.10	210.00	177.90
80 lb. " "	2	16.00	35.87	55.80	107.67	220.00	112.33
85 lb? " "	10	83.26	102.40	272.46	458.12	1154.00	695.88
85 lb. Solid Mang.	1	4.50	6.65	31.52	42.67	81.00	38.33
	166	1131.78	1416.79	3234.82	5783.39	13478.65	7695.26

Less Material Reaches Scrap

While the growth of the roadway plant is a feature of this company's recent reclamation activities, it is in connection with the mechanical department material, however, that the big savings from reclamation come. Much of this work originates with the supply officers whose instructions are explicit and whose aims are high. The scrap pile must be carefully gleaned for recoverable material and every article repaired that is not plainly unfit for further use. As a result scrap yards are producing increased reclamation tonnage, while the amount of serviceable material found in scrap grows less, that recovered from the company's largest scrap collecting point, Waycross, Ga., for instance, amounting to $1,852 only in March, 1925, as compared with $8,454 in March, 1924. Much of this work, however, originates in the mechanical department and the work is nearly all done as indicated in the vigor of their business meetings.

by this department. Conditions in this respect are the same as before; there is no separate reclamation facility for mechanical material. Each shop or repair point engages in this work coincident with its other operations. But the work has been systematized and greatly increased. A conception of its scope is afforded in the partial record of the articles reclaimed in the one month of April at the Emerson shops of this company, one of the two main shops and but one of 21 repair points.

MECHANICAL STATEMENT OF MATERIAL RECLAIMED BY OXY ACETYLENE, ELECTRIC ARC OR OTHERWISE, MONTH OF APRIL, 1926

	Method	Description of article	No. art.	Scrap Value	Value Mat'l used	Value of Labor	Total labor & Mtl.	Value new	Amount saved
Rec. Loco.	Arc.	Trailer boxes	10	9.00	8.40	13.20	30.60	250.20	219.60
		Valve Blades	18	1.80	2.16	3.06	7.02	54.00	46.08
		Quadrons	9	2.70	5.40	4.94	14.04	81.00	66.96
		Main equalizers	12	7.80	3.84	4.68	15.72	96.00	80.28
		Crossheads	12	13.20	8.64	15.74	37.56	418.32	380.76
		Link blocks	28	1.40	5.06	9.24	15.70	42.00	26.30
		Valve yokes	10	3.00	1.20	1.70	5.90	70.00	64.10
		Driving boxes	31	27.90	13.64	20.46	62.00	775.62	713.62
		Crosshead guides	24	26.40	51.84	63.36	141.60	432.00	290.40
		Reverse levers	8	2.00	2.56	5.28	9.84	48.00	38.16
		Crank arms	8	6.40	5.28	10.56	22.24	160.00	137.76
		Valve links	22	1.32	2.64	3.74	7.70	66.00	58.30
		Jack braces	6	1.20	.72	1.02	2.94	18.00	[illegible]
		Trailer truck braces	10	6.00	9.60	[illegible]	31.00	82.00	[illegible]
		Piston rods	6	3.60	3.24		10.00	[illegible]	
		Pedest[illegible]	[illegible]	12.30	4.[illegible]	13.6[illegible]	24.19	[illegible].00	17.64
		[illegible] yokes		7.20	[illegible].00	8.44		76.00	53.36
		[illegible]drake levers	14	[illegible].00	1.60	2.10	[illegible]	21.00	14.10
		Center plates	16		5.12	9.52	19.84	133.20	113.36
		Brake heads	28	1.[illegible]	2.24	3.36	6.72	56.00	49.28
		Buffer stems	14	1.12	1.12	1.68	3.92	21.00	17.08
		Truck bolsters	3	3.60	1.86	2.25	7.51	67.50	59.99
		Total-		45.04	32.46	38.39	115.89	560.70	444.81
Rec. Loco.	Oxy-	Drawhead castings	10	6.00	21.50	8.00	35.50	90.00	54.50
		Piston heads	10	8.00	32.40	15.60	76.00	145.00	69.00
		Track pedestals	28	5.60	30.24	9.24	45.08	89.60	44.52
		Eng. Cent. castings	4	3.60	11.40	5.36	20.36	98.40	78.04
		Boiler check valves	6	1.80	4.92	1.92	8.64	24.00	15.36
		Crosshead gibbs	12	3.60	14.40	4.68	22.68	60.00	37.32
		Cellar boxes	21	2.16	9.24	6.93	18.33	67.20	48.87
		Crown brasses	12	37.20	16.56	7.68	61.44	174.00	112.56
		Main rod Brasses	8	12.00	8.40	4.66	25.06	64.00	38.94
		Valve bull rings	10	1.00	27.40	5.50	33.90	65.00	31.10
		Bell cranks	12	.60	11.52	3.12	15.24	96.00	80.76
		Injectors	6	3.60	5.10	2.28	10.98	126.00	116.02
		Superheater Flues	118	82.60	17.25	12.98	112.83	2596.00	2483.17
		" header	1	4.00	9.20	3.20	16.40	150.00	133.60
		Eng. cylinder #1214	1	25.00	211.67	156.67	393.24	975.00	581.76
		Eng. " #827	2	30.00	23.50	9.20	62.70	1330.00	1267.30
		Air pump piston heads 14-5/8"ø		4.50	55.35	9.36	69.21	217.99	148.[illegible]
		" " " " 8-1/2"	14	3.50	65.30	10.92	69.72	291.76	222.04
		Piston bull rings	14	14.00	15.40	25.55	54.95	163.66	108.71
		Valve bull rings	6	3.00	13.80	12.54	29.34	52.00	22.66
		Spring saddles	4	2.00	6.00	2.92	10.92	55.00	44.08
		Driving tires	12	12.00	85.44	23.36	120.80	316.00	195.00
		Total-		265.76	705.89	341.67	1313.32	7246.51	5933.19
Rec. Frt.	Oxy-	Couplers 5 x 5	28	22.40	61.88	21.00	105.28	544.04	438.76
		" 5 x 7	11	8.80	24.31	8.25	41.36	157.08	115.72
		Total-		31.20	86.19	29.25	146.64	701.12	554.48
Rec. Damaged Frt.	Oxy-	Cast bracket	1	.10	.49	.80	1.39	2.00	.61
		Cast frame	1	.30	.49	.80	1.59	3.50	1.91
		Laundry-machine	1	100.00	9.60	8.00	117.60	2000.00	1882.40
		Total-		100.40	10.58	9.60	120.58	2005.50	1884.92
Rec. Frt.	Others-	Brake beams	489	300.73	583.98	132.21	1016.92	3295.36	2278.44
		Draft gears	257	462.60	273.00	133.56	869.18	7324.50	6455.32
		Spring planks	297	322.99	389.08	301.13	1013.20	1291.96	278.76
		Steel ends	86	120.40	583.79	184.76	888.95	933.10	44.15
		Truck bolsters	112	241.92	12.00	[illegible]	441.80	3024.00	2532.20
		K-1 triples	324	64.80	342.[illegible]	24.[illegible]	763.26	90[illegible]	[illegible]
		K-2 triples		27.45	[illegible]	27.00	412.53	[illegible].00	54.00
		[illegible] couplers		7.04		7.50	[illegible].49	[illegible]13.75	192.75
		Grab irons	180			3.00		16.80	10.80
		Draft keys	15			2.25	3.75	27.50	23.75
		Pounds bolts	1400	75.[illegible]		24[illegible].00	99.00	359.00	260.00
		Kegs of nuts	10	13.30		3.30	16.60	82.50	65.90
		Total-		1921.56	2534.56	1806.76	5262.88	54,041.01	27,778.13
Rec. Locos. & Cars	Others-	Couplers	39	37.44	121.55	29.25	188.24	683.46	495.22
		Scrap springs	160	177.60	69.24	247.45	494.29	2652.00	2157.71
		Farlow links	86	532.14		141.12	673.26	2715.00	2041.74
		Cut washers	26001b.	199.50		65.17	264.67	798.00	533.33
		Signal hose	150	60.00	38.58	1.96	100.54	345.00	244.46
		Air hose	1600	437.00	1506.85	148.96	2092.81	3904.00	1811.19
		Steam hose	200	246.00	347.48	21.07	614.55	1000.00	385.45
		Total-		1689.68	2083.70	654.98	4428.36	12,097.46	7669.10
Rec. Loco. & Cars	Others-	Wheel centers 26"	4	19.20				280.00	
		" 650[illegible] CC	6	15.00				58.14	
		Axles 4-1/4 x 8	460	2070.00				7594.50	
		" 8 x 9	406	1827.00				8854.86	
		" 5-1/2 x 10	214	963.00				5608.36	
		" 6 x 11	27	121.50				1039.77	
		" 6-1/2 Eng. truck	5	22.50				120.00	
		Total-		5038.20		523.78	5561.98	23,455.73	17,893.75
		TOTAL EMERSON		9494.64	5995.09	3871.39	19,361.12	88,161.79	68,800.67

The articles range from bell cranks to locomotive cylinders. None of this material represents the conversion of one thing into another but instead comprises material which is recovered or repaired for further use. At the present state of reclamation developments on the Atlantic Coast Line there is practically no manufacturing of scrap into material or another character. Some material is included in the work which involves only a comparatively small labor charge to render it available for use again, as, for instance, in the case of axles the reclaiming of which involves scarcely more than their removal from scrap wheel centers. On the other hand, it is interesting to observe the large volume of material that involves extensive work to render it serviceable..

Welding extensive

It is particularly in this connection that the electric and acetylene work invites attention. It is the practice to separate these classes of work from each other and from other work in reclamation reports. The April report for Emerson shows that oxy-acetylene reclamation work was done on 10 draw head castings, for instance, on 10 piston heads, on 28 truck pedestals, 6 boiler check valves, 12 crosshead gibbs, 21 cellar boxes, 12 crown brasses, 8 main road brasses, 6 injectors, 118 superheater flues, 3 locomotive cylinders, 23 air pump piston heads, 12 driving tires, 39 couplers, etc., involving 694 items all told, at this point alone in the one month, the reclamation of which is reported to have been accomplished for $10,171 less than the price of the material new.

An equal amount of work was done by electric welding, this work including 10 trailer boxes, 18 valve blades, 12 equalizers, 12 crossheads, 28 link blocks, 10 valve yokes, 31 driving boxes, 24 crosshead guides, 8 reverse levers, 22 valve links, 6 jack braces, 18 brake beams, 6 drawbar castings, 12 truck bolsters, 23 center plates, and other material, aggregating 528 items, at this point during the one month, which is reported to have been done for $4,741, less than the price of the material new. In this work the authorities have been keenly interested and have been encouraged to give the processes widespread application until at the present time the Atlantic Coast Line is distinctly a leader in welding.

While much of the work is still in the experimental stage this road is at present reclaiming from 85 per cent to 90 per cent of its broken locomotive cylinders instead of discarding them. It only purchased 665 journal boxes in the 12 months following the launching of journal box welding as compared with the purchase of 3,374 under like conditions in the same period prior to starting the work, a reduction which represents a saving of approximately $23,500, in purchases. For the month of April the reclamation credits to operating expenses for the en-

tire road amounted to $6,254 for electric arc welding, $15,475 for welding by acetylene, and $156,475 by other processes, or at the rate of $72,000 a year for declamation by electric welding, and $180,000 per year for reclamation by oxy-acetylene welding.

In this connection it is emphasized that reclamation operations, so-called, involve in the main only the material which is returned to regular stock and is therefore to be distinguished from those operations where worn or broken materials or parts are reapplied to the same equipment after being repaired, the latter work being designated repairs. It is interesting to note, therefore,


J&B—10000 ORIGINAL Form 3213-A

ATLANTIC COAST LINE RAILROAD COMPANY

STORES DEPARTMENT

Shop Order No. .....SHOP Date 192

Req. No

To Mr Foreman

Please manufacture or reclaim the article listed below. All requisitions (Form 407) for material to be used in the construction of the article, must show the above shop order number. A careful record of all labor employed in the manufacture of the item called for on this order must be kept in the space provided on this form, and proper report made to the Shop Superintendent or Master Mechanic at the end of each month.

This material required for.....

S. H. FILE No.....
Item to be manufactured:

Storekeeper

HOURS LABOR PERFORMED ON FOREGOING SHOP ORDER

Day	Month of...192... Mechanics	Helpers	Day	Month of...192... Mechanics	Helpers	Day	Month of...192... Mechanics	Helpers
1			1			1		
2			2			2		
3			3			3		
4			4			4		
27			27			27		
28			28			28		
29			29			29		
30			30			30		
31			31			31		
Total			Total			Total		

NOTE.—Where more than one mechanic or helper works on the same shop order at the same time, the total number of hours performed should be entered in the proper columns for the day.

Order completed this.....day of.....192.....

Foreman

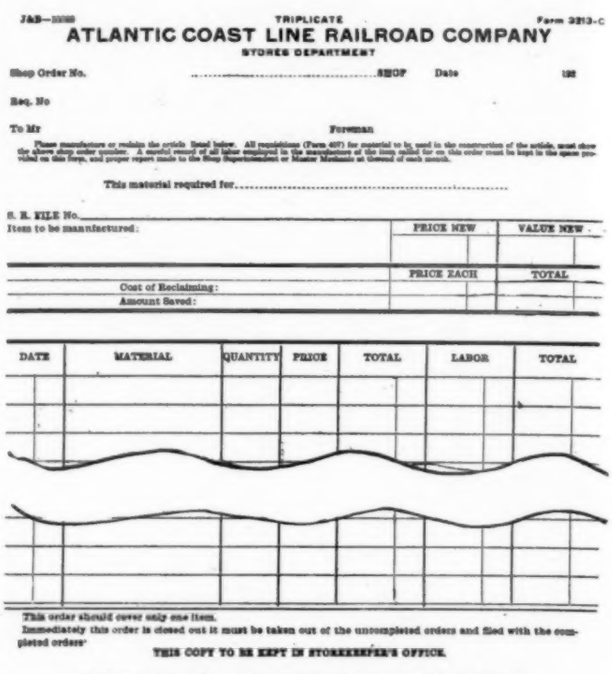
This form to be sent by General Foreman to Foreman doing work, who upon completing the work, will sign and return to General Foreman.

Exhibit A—Work Foreman's Copy of Shop Order

that in addition to the above reclamation work by welding, a saving of $10,000 was made in the one month from the use of oxy-acetylene in strictly repair work, where a record is kept of the material involved similar to the reclamation records. Electric arc welding and oxy-acetylene welding have proved popular with the

Reclamation Systematized by Accounting

The procedure is an important element of the Atlantic Coast Lines' reclamation. The first step is the shop order. A shop order must be issued by storekeepers for any material to be reclaimed. This order is made in


J&B—10000 TRIPLICATE Form 3213-C

ATLANTIC COAST LINE RAILROAD COMPANY

STORES DEPARTMENT

Shop Order No. .....SHOP Date 192

Req. No

To Mr Foreman

Please manufacture or reclaim the article listed below. All requisitions (Form 407) for material to be used in the construction of the article, must show the above shop order number. A careful record of all labor employed in the manufacture of the item called for on this order must be kept in the space provided on this form, and proper report made to the Shop Superintendent or Master Mechanic at the end of each month.

This material required for.....

S. H. FILE No.....
Item to be manufactured:

	PRICE NEW	VALUE NEW
	PRICE EACH	TOTAL
Cost of Reclaiming:		
Amount Saved:		

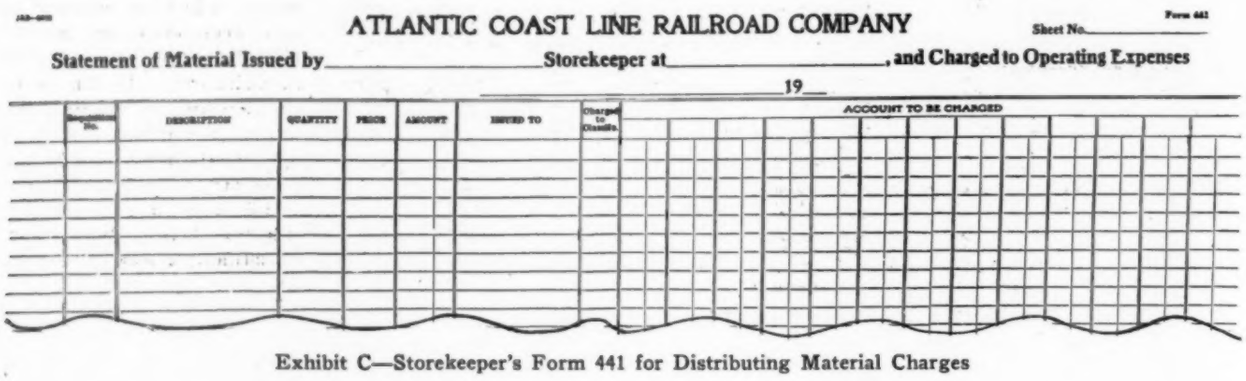
DATE	MATERIAL	QUANTITY	PRICE	TOTAL	LABOR	TOTAL

This order should cover only one item.
Immediately this order is closed out it must be taken out of the uncompleted orders and filed with the completed orders.

THIS COPY TO BE KEPT IN STOREKEEPER'S OFFICE

Exhibit B—Storekeeper's Copy of Shop Order

three copies—one white, one yellow and one pink. The first two go to the mechanical officer in charge, who forwards the first copy to the foreman doing the work. As shown in Exhibit A, they provide a daily record of the hours of labor expended by the mechanics and helpers throughout the period of the work. When the work is completed the first copy is returned to the storekeeper, while the second copy is retained by the mechanical officer in charge. Meanwhile the pink copy is the storekeeper's copy. As Exhibit B shows, this copy differs from the other two in that it provides for a progressive


J&B-0000 Form 441

ATLANTIC COAST LINE RAILROAD COMPANY Sheet No.

Statement of Material Issued by Storekeeper at , and Charged to Operating Expenses

19

Requisition No.	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ISSUED TO	Charged to Classification	ACCOUNT TO BE CHARGED

Exhibit C—Storekeeper's Form 441 for Distributing Material Charges

supply department because of the decrease afforded in purchases and the amount of stock carried, the welding processes especially being cited as a means of at least prolonging the serviceability of parts until purchases can be made, thus making it unnecessary to carry large stocks of protective but slow-moving material. It is an important element of this road's reclamation activities.

tabulation of the quantity, unit price and total cost of material, also the cost of labor, together with a record of the unit and total cost of reclaiming, and the amount saved. The storekeeper determines the material used from requisitions which must be filed whenever scrap or new material is drawn from stock. Requisitions give the shop order number and it remains only for the store-

keeper to extend the prices in each case and enter the charges on his copy of the shop order as they develop. The shop orders issuing from any store are numbered consecutively. As these shop orders are issued, the storekeeper's copy is posted in a loose-leaf binder, where it remains until completed as signified by the return of the first copy from the shop with the total labor charges.

ATLANTIC COAST LINE RAILROAD COMPANY
STORES DEPARTMENT

.....Storehouse.

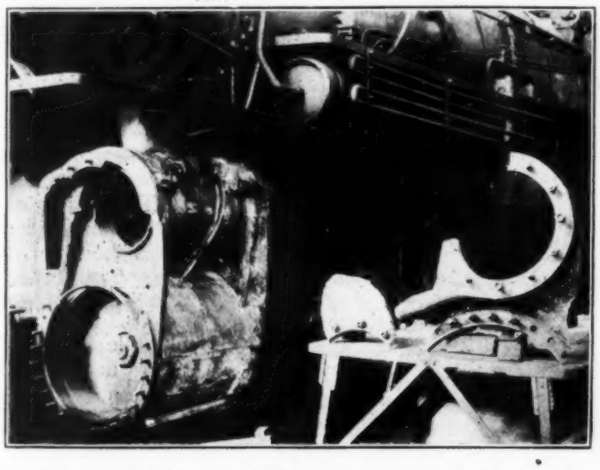
Manufactured Material Account—Balance Sheet

DEBITS			CREDITS		
Balance			Shop orders completed—material reclaimed:		
Shop labor:			Shop orders completed—new material manufactured:		
Storehouse labor			Balance forwarded:		
Material:					
Total debits			Total credits		

Exhibit D—Storekeeper's Monthly Balance Sheet for Reclaimed and Manufactured Material

When checked and found correct with respect to all labor and material charges, the completed shop order is transferred to a loose-leaf binder of completed shop orders.

The shop orders not only regulate the work but are the backbone of the accounts. Three accounts are involved, a Material and Supply Account, a Manufactured Material Account and the Operating Expense Account. The accounting begins with the issuance of the shop order. In the first place, any article to be reclaimed is taken into the Material and Supply Account at the price of scrap, a form being employed for this purpose similar to the

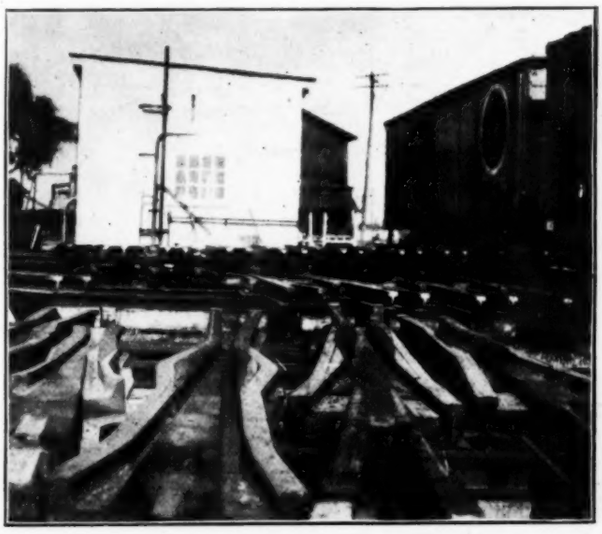


The Coast Line Reported Three Locomotive Cylinders Reclaimed at Emerson Shops in a Single Month, Saving $1,848

invoice for material received into stock by purchase. Simultaneously, the proper operating account is credited with the same amount. When this article or any other material is drawn from stock, which is done by requisition, the material like any other issue, is posted by the storekeeper on his form No. 441, as shown in Exhibit C, where the cost is charged to a Manufactured Material Account. Meanwhile the mechanical department charges any labor on the shop order to this account as it develops and furnishes the storekeeper each month with a list of the labor charges against each shop order. Where labor is expended by the stores department in reclaiming material a similar procedure is followed.

Shop orders are not always completed during the month. Largely to meet this situation each storekeeper maintains the monthly balance sheet in the front of his binder of incompleted shop orders. This form is shown by Exhibit D, which provides a record for each month during a four-months' period. On the debit side the total amount of material charged to manufactured material is kept and the amount of labor for the month. On the credit side is entered the total value of the completed shop orders for the month, divided as between reclamation and manufacturing. The difference between the credit side of the balance sheet and the debit side shows the amount of unfinished work, although not the amount of unfinished reclamation. Copies of this statement are forwarded to the purchasing agent for purposes of consolidation.

The completed shop orders are also submitted for the preparation of the monthly statement showing the ma-



Manganese Frogs Repaired at Savannah, Ga.

terial reclaimed and the savings consequent upon it. When the shop orders are completed an additional form is prepared for the attention of the auditor of disbursements which charges the Material and Supply Account with the cost of the new material and credits the Manufactured Material Account with the cost of the new material and credits the Manufactured Material Account with the amount of labor and material. The difference between the value of the new material and the cost of reclaiming the material is then credited to Operating Expenses. The various steps in the accounting for the reclamation of the material are illustrated in the accompanying summary of the transactions in connection with the reclamation of one steel bolster.

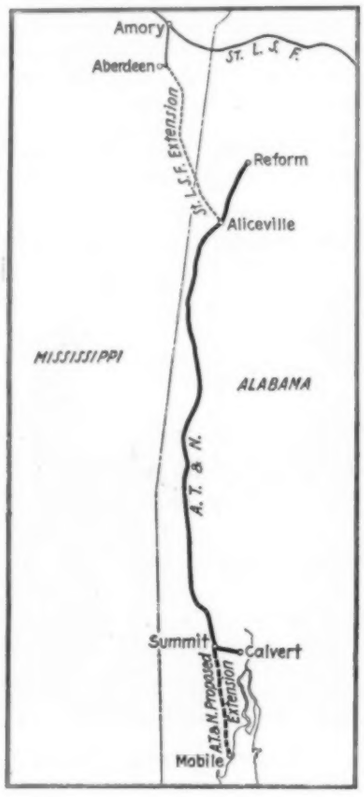
It will be seen that the entire plan of reclamation is designed to give each shop and storehouse credit for all material that is reclaimed and for all work done, as well as to systematize the entire progress in such a way as to promote this type of work and secure the best results. The savings outlined in the beginning are indicative of the success of the present activities as they have been evolved under the direction of F. H. Fechtig, purchasing agent, and R. D. Hawkins, general superintendent of motive power.

THE PACIFIC ELECTRIC, in conjunction with the Atchison, Topeka & Santa Fe, will establish passenger service between the Los Angeles, Cal., harbor district and San Diego. Electric and stage routes will be used to San Juan Capistrano and the line of the Santa Fe will be used from this point to San Diego.

A. T. & N. Seeks to Enter Mobile

THE Alabama, Tennessee & Northern has applied to the Interstate Commerce Commission for permission to construct an extension of its line from a point near Summit, Ala., into Mobile, Ala., thus giving the railroad a port terminal on the Gulf of Mexico.

The extension, which if built will be approximately 30 miles in length, will pass through no cities or incorporated towns, and will be built in a southerly direction from Summit. It has been designed primarily to allow the Alabama, Tennessee & Northern to enter the port of Mobile, and to handle traffic from this point to points along its own line, and to points along that of the St. Louis-San Francisco.



In order to accomplish the latter, the Frisco is building an extension from its main line at Aberdeen, Miss., to Aliceville, Ala., which is on the present line of the Alabama, Tennessee & Northern.

According to the application, the two railroads have entered into an agreement covering the interchange of traffic, which will become fully effective when the Frisco extension is completed between Aberdeen and Aliceville, and the applicant's line is in operation to Mobile.

The application states that both present and future convenience and necessity require the construction of the proposed extension, because it will afford needed facilities for the people now served by the applicant's line, and by the Frisco system. It will also provide an outlet on the Gulf of Mexico for the territory served by the Frisco in lieu of the traffic interchange agreement.

The Alabama, Tennessee & Northern was incorporated under Alabama state laws during 1918, and has at present been operating between Reform, Ala., and Calvert, Ala.

The railroad plans to finance the extension to Mobile by the sale of prior lien bonds, heretofore issued, and now in the treasury of the company; by the issuance of prior lien mortgage bonds in accordance with the terms of the prior lien mortgage of the railroad; out of its surplus earnings, or by the sale of such other securities as the applicant finds advisable from time to time, and as the Interstate Commerce Commission may approve.

It has been the intention of the Alabama, Tennessee & Northern, since the beginning of construction of its present line, eventually to build the proposed extension into Mobile, providing permission was granted by the Interstate Commerce Commission, it is stated in the application.

Investment Bankers Review Railway Conditions

"AS regards the railroads themselves, it may be said that they are enjoying the most prosperous period of their existence, a period in which carloadings and earnings have both reached record figures and net return on property investment is the highest since the war. The favorable effect of this condition upon the security owner and the public needs no elaboration."

The foregoing appeared in the report of the railroad securities committee. Joseph R. Swan of the Guaranty Company, New York, chairman, presented at the convention of the Investment Bankers' Association held at Quebec last week. The committee's report said:

"As a result of a most satisfactory condition in the railroad field and also of a feeling on the part of your committee that active participation of our association in matters of railroad legislation might result in more harm than good, because of the attitude of legislative bodies toward large banking interests which we represent, the railroad securities committee has no important activities to report. This does not mean that we must always remain silent but does mean that we must reserve our activities for matters of importance and assert our influence with discretion."

The committee report reviewed a wide variety of the important factors at present of leading interest in connection with railways. Speaking of the Interstate Commerce Commission's decision in the western rate advance case, it said "it is not altogether easy to understand. * * * It is difficult to reconcile the decision with Section 15a of the transportation act, for the railroads in the territory affected, to earn a fair return, must have an advance in rates."

An important section of the report dealt with railway financing with particular reference to competitive bids for railway securities. On these points, it said:

"During past years there has been much talk by railroad executives and others to the effect that railroad rates did not permit a sufficient return on capitalization to make possible financing of railroads by junior securities. Practically all financing, therefore, has been done through the issuance of mortgage bonds. Market conditions have now, however, made it possible for a number of railroads to effect financing by such issue. * * *

"One important action having a very direct bearing on railroad finances has been the decision of the commission compelling the railroads to seek competitive bids in connection with their offering of equipment trust certificates. This method of selling these certificates has resulted in the railroads receiving exceptionally high prices for their certificates, because of the fact that the demands for securities by investment bankers and the public has been of an exceptional nature. It is probably true that in good times this will continue to be the case. Whether, however, it is wise for the railroads to be forced to give up their custom of having recognized bankers responsible for the sale of their securities and the care of their markets, it is not possible to predict. While many of us are glad to have the opportunity of purchasing direct securities which have not, up to this time, been available in that manner, we would, if asked for an unprejudiced opinion, probably agree that the securities of companies which are brought out at right prices rather than at too high prices are in the long run more popular, and that the continuous borrower who sells his securities to bankers of his own choice on a reasonable basis receives the most for them in the end."

I. C. C. Attorneys Object to Railroad Brief

Ask commission to strike from record characterizations by carriers' lawyers

WASHINGTON, D. C.

THE Interstate Commerce Commission's Bureau of Valuation, by its authorized attorneys, has filed with the commission a motion to strike from its record the 397-page reply brief filed with the commission by Squire, Sanders & Dempsey in the valuation proceedings involving the Wheeling & Lake Erie and subsidiaries and the Lorain & West Virginia. As grounds and reasons for this motion "the bureau shows to the commission that this reply brief contains improper and offensive language, used to characterize the witnesses and attorneys who have represented the commission and participated in the hearing and in the preparation of the bureau's brief in these proceedings and to destroy the effectiveness of the work of the witnesses and attorneys of the Bureau of Valuation in the present investigation."

The motion is signed by Charles A. Russell and H. H. Wilkinson, attorneys for the bureau, and also by Charles W. Needham, solicitor, and Oliver E. Sweet, assistant solicitor, while the railroad brief to which exception is taken, dated September 29, is signed by the law firm and also by W. R. Van Campen, Atlee Pomerene, Robert F. Denison, Andrew P. Martin and Paul L. Holden, the latter four being listed as "of counsel."

In support of the motion the bureau attorneys have reprinted selected quotations from the railroad brief to which they object, some of which characterize statements of the bureau counsel with such words as "unethical, abusive, insulting, scurrilous and untrue."

Attention is directed particularly in the motion of the bureau lawyers to the following "improper and offensive language, expressions and characterizations which have been selected from the said reply brief for the purpose of illustrating the extent to which attorneys and counsel for the protestants have gone in the use of improper and offensive language; these illustrations are considered to be sufficient to constitute a basis for this motion and for the order requested to strike said brief from the record, and do not purport to constitute all, or even a considerable portion, of the many instances in which improper and offensive language has been employed in said reply brief":

At page 1 of the reply brief counsel for protestants say that in the brief they will not attempt to answer: "all of the misleading and inaccurate statements by counsel for the Bureau of Valuation, or to point out all of the inaccuracies, misstatements and misrepresentations contained in the testimony of its witnesses. * * * Nor will an attempt be made to comment upon all of the insulting and scurrilous matter contained in the brief for the bureau, * * *"

At page 29 of the reply brief, after quoting two paragraphs from the brief of the bureau, counsel say, with reference to the "inference evidently intended by bureau's counsel," that, "They are statements one might expect from counsel who resort to all the tactics of a pettifogger in the absence of a knowledge of the ethics of his profession."

At page 55 of the reply brief, in their discussion of the testimony of a witness for the bureau respecting a transaction involving a transfer of land, counsel for protestants say: "Not only was the motive of correct valuation lacking in the bureau's witness, * * *"

At page 103 of the reply brief, counsel for protestants, in referring to the testimony of one of the commission's land appraisers, say: "How well he carried out the instructions of his superior officer is evidenced by the fact that * * *" (The inference here being that the witness made his appraisal for the purpose of supporting a preconceived notion of the unit value of the tract of land rather than for the purpose of arriving at his independent judgment of that unit value). Continuing on the same page, counsel say: "The sincerity of this reappraisal is certainly open to serious question * * *."

At page 146 of the reply brief counsel for protestants say: "Can anyone read these words without being convinced that the writer was obsessed with an inordinate desire to misrepresent the carrier's property in such a way that it would result in its under valuation? Of what value can the testimony of witness St. John be in arriving at a judgment as to value of the carrier's land when it is considered that he was not only obviously prejudiced * * *."

At page 149 of the reply brief counsel for protestants say: "Here again, is disclosed either ignorance or wilful misrepresentation of the conditions existing, by the bureau's appraiser."

At page 239 of the reply brief counsel for protestants, referring to certain photographs taken and introduced into the record by one of the commission's land appraisers, say: "They have every appearance of having been taken to deceive."

At page 243 of the reply brief counsel for protestants suggest that counsel for the bureau "might well first scrutinize the methods of investigation and the testimony of its own itinerant land appraisers * * *."

At page 264 of the reply brief counsel for protestants referring to the work of the bureau's appraisers and witnesses, say: "that their function in these proceedings was to find support for the bureau's original appraisal as corrected by its reviewer; * * * is it to be presumed that its [bureau's] witnesses approached this problem with no interest in seeing the work of the bureau upheld, or is it rather not more probable that they were instructed to secure support for the work of the bureau and actually endeavored in all instances, to do so? * * * the testimony of the bureau's witness is deserving of no special credit as that of impartial and unprejudiced employees of the commission."

At page 329 of the reply brief counsel for protestants say: "One of the most unscrupulous misstatements contained in the bureau's brief, is that appearing at pages 334 and 335, where counsel for the bureau accuse the carrier's attorneys of distorting the rule of the Minnesota Rate Case * * *."

At page 352 of the reply brief counsel for protestants say: "We cannot refrain from congratulating the bureau upon possessing such omniscient counsel, or from applying to them the lines of Oliver Goldsmith: '* * * and still the wonder grew that one small head could carry all he knew.'"

At page 355 of the reply brief counsel for protestants accuse counsel for the bureau of making a "sinister intimation" and on the same page and within the same paragraph the criticism by the bureau's counsel of a witness for the protestants is characterized as follows: "a more cowardly attack can not be imagined."

At page 382 of the reply brief counsel for protestants refer to the cross-examination of witness Cragin for the protestants by counsel for the bureau, and say: "* * * statements contained in the following pages of the bureau's brief bear many of the earmarks of the bureau's chief cross-examiner, whose antipathy towards Mr. Cragin was evidenced throughout the length of his cross-examination, making it apparent that he was 'out to get him.'"

At page 386 of the reply brief counsel for protestants say: "The campaign of vilification of bureau's counsel was by no means limited to an attack upon Mr. Cragin, as witness the following cowardly attack:"

At page 387 of the reply brief counsel for protestants say: "Surely the ethics of the profession have fallen to a low level when counsel for a governmental agency are permitted in an official publication to vilify and maliciously attack the reputa-

tion, character and integrity of witnesses who have no medium of defense. The attack is as uncalled for as it is false in its imputations, insinuations and innuendoes * * *."

At pages 388 and 389 of the reply brief counsel for protestants say: "The carrier had understood that it was appearing in a valuation proceeding before the commission and presented its evidence accordingly. After it had put in its case and after the usual cross-examination of its witnesses, new and additional counsel were injected into the case by the bureau and the carrier's witnesses were recalled for a second cross-examination. From this time on until the filing of the bureau's brief the sole ambition of the bureau's counsel has been an effort to vilify and slander the opposing witnesses and counsel alike. Bureau's counsel have done all in their power to convert an orderly valuation proceeding into a defamation party. The remarks and charges of the bureau's counsel, occurring and recurring throughout the hearing and reiterated in the bureau's brief are so unethical, abusive, insulting, scurrilous and untrue that they cannot be passed over lightly. They are the type which may be expected from counsel who are unschooled in the ethics of their profession. Bureau's counsel, without the slightest foundation have charged carrier's witnesses with everything from mis-statements of fact and concealment of evidence to deliberately attempting to secure an exorbitant and excessive valuation of the carrier's lands.

"As typical of the animus injected into the case by bureau's counsel the carrier calls the commission's attention to a few of the malicious, false and untrue charges and attacks contained in the bureau's brief, many of which are as near to being libelous as unscrupulous attorneys may go without affording good ground for legal action."

"Sharp differences of view and considerable bitterness developed in the course of the hearing in these proceedings as an examination of the transcript of the testimony will show," the motion continues. "Counsel for protestants have reflected this bitterness in their reply brief, containing 397 pages, which purports to be an answer to the brief on behalf of the Bureau of Valuation. There is, however, in the bureau's brief no attack upon counsel for protestants and no abusive or offensive language that justifies in any way the language which counsel for protestants have employed in their reply brief. It is the belief of attorneys for the bureau that they have shown in their brief that the testimony of Mr. Cragin, a land witness for protestants, is entitled to little, if any, consideration by the commission. It is believed further that this is the main reason why counsel for protestants have employed the improper, abusive and offensive language found in the reply brief in question.

"Attorneys for the bureau are prepared to show, if the commission pleases, at a time and place to be determined by the commission, that the objectionable language in the reply brief is wholly unjustified and uncalled for, and that the statements in the brief of the bureau to which exception is taken in the reply brief are supported in all instances by the transcript of testimony and exhibits in the case."

Report on Colorado Collision

W. P. BORLAND, director of the bureau of safety, has reported to the Interstate Commerce Commission on the collision of passenger trains on the Denver & Rio Grande Western near Waco, Colo., September 5, when 30 persons were killed and 54 injured. This derailment, which was due to excessive speed, was reported in the *Railway Age* of September 11 and 18. Following is an abstract of Mr. Borland's report.

Eastbound passenger train No. 2, consisting of locomotive No. 1604 and 14 cars, was derailed on a sharp curve while running at about 45 miles an hour; and 27 passengers, two employees on duty and one employee off duty were killed; 45 passengers, three employees on duty, three employees off duty, two news agents and one Pullman porter were injured. The curve was one of 11 deg. 30 min. and the grade, descending, was 0.32 per cent. The track was well maintained. The time table speed limit for all trains on sharp curves is 30 miles an hour.

Fireman Willingham, the only survivor on the locomotive, was the principal witness at the hearing. He said that at Malta the train had overrun the water tank about the length of a car, due he thought, to an error of judgment. So far as he knew, nothing was said to the road foreman (who was running the engine), by the engineman, about using the brakes, although at one point the engineman had told the fireman that the road foreman was "certainly running fast." On approaching the curve where the derailment occurred, the brakes were applied lightly and took hold properly but apparently were not applied soon enough. At the entrance to the curve, which is 285 ft. long, Willingham felt sure that the train could not run over it in safety, but there was nothing for him to do but hold on, there being a high wall of rock on his side, the inner side of the curve. Willingham said that the brakes had worked properly at all times. The locomotive was new, of the 4-8-2 type and weighed, with the tender, 710,310 lb. Engines of this type are designed for use on curves up to 15 deg. and the lateral motion on the front driving wheels was ¼ in.

The investigation developed that passenger trains on this road had not been making good time and, about July 5, the general superintendent of transportation issued a bulletin calling attention to the matter and a bulletin was issued calling for a record of passenger train performance each 24 hours. The record showed that during the month of August it was a matter of almost daily occurrence for an eastbound train to make up 30 minutes lost time between Malta and Salida, 56 miles; and sometimes they made up 40 minutes, but on a rather slow schedule. In this territory there are 25 curves varying between 8 deg. and 14 deg. besides innumerable lighter ones. On August 17, the superintendent of the Pueblo and the Denver divisions issued a bulletin stating that enginemen were running too fast. Comparisons of records showed that the average speeds attained here were not as high as those attained on the Salida division. There is no record of any warning being issued regarding speed by the superintendent of the Salida division.

The theoretical elevation of the outer rail for a speed of 30 miles an hour on a curve of 11 deg. 30 min. is 6.81 in. The inspector holds that with an elevation of only 4 in. there would be serious danger of the overturning limit being reached. Between Malta and Salida, there are curves of 14 deg. which according to the A. R. E. A. standard would call for a theoretical elevation of 8.32 in., if a speed of 30 miles an hour is to be permitted.

The inspector thinks that if the speed had been 30 miles an hour or lower the derailment would not have occurred. As the engineman was more familiar with the territory, the inspector thinks that if he had been in charge of the engine he would have reduced the speed at this curve to a safe degree. In conclusion the report says that if the desire is to expedite the movement of freight, resulting in low elevation of the outer rail on curves, the speed of passenger trains must be restricted on such curves.

APRIL 27, 1927, has been set as the date on which service will be inaugurated on the Mississippi river between St. Louis, Mo., and St. Paul, Minn., by the Federal Barge Line. A total of 15 barges with 4½-ft. draft, and 3 tow boats, will be used in the service. A six-day schedule will be maintained.

American Railway Employed Boys Clubs

This movement, started a few years ago, greatly stimulated by the national conferences

By John H. Henry

Traveling Railroad Y. M. C. A. Secretary for the Central Eastern Region

The Northern Pacific Employed Boys Club of St. Paul, Minn., Claims the Honor of Being the First ARCB Club.

THAT the youth movement is becoming an actuality on North American railroad systems is indicated by the answers received to a short questionnaire which was recently sent by the Transportation Department of the National Council of Y. M. C. A. to the Railroad Y. M. C. A.'s in Canada and the United States. The purpose was to ascertain the number of AREB Clubs (American Railway Employed Boys Clubs) that have been organized since the Railroad Y. M. C. A. began promoting the Annual Younger Railroad Men's Conferences in 1923. In addition questions were asked as to the number of members, the kind of activities conducted by the various clubs, typical programs of meetings, and general information as to the younger men's or boys' work in the railroad fields of North America. The questionnaire does not record the many clubs organized by railway personnel directors, apprentice supervisors, other departments of the Y. M. C. A., etc. The AREB Club idea has developed so rapidly that no complete list of such clubs is available.

The questionnaires were sent to 252 Railroad Y. M. C. A.'s, operating on 60 different railway systems, wherever it was thought service to the younger railroad men could be promoted and where definite information was available as to the organized clubs. An effort will be made at the 1926 Younger Railroad Men's Conference to perfect a record of such clubs at all points in Canada and the United States.

Up to May 1, 1926, there were received 167 replies to the questionnaire. A part of the data gleaned from these replies is of interest in checking up the efforts of the delegates to the national conferences among their fellow-employees—after the 154 delegates returned from attending the conference at St. Louis in 1923, the 238 at Detroit in 1924 and the 277 at Pittsburgh in 1925. In addition to the 669 carefully selected delegates in attendance at these three Younger Railroad Men's Conferences,* there were associated with them more than 200 special speakers and leaders in vocational guidance and character building counsel.

As a direct result of the attendance of this number of young railroad men at the annual conferences, many of the present 98 AREB Clubs, with a membership of 1,981, were formed. It is interesting to note that while only six clubs were organized in 1924, there were 25 clubs organized in 1925. In the first four months of 1926 twenty-two new clubs were organized. Weekly or monthly club meetings are held, with regularly elected officers conducting the programs. An experienced railroad official or leader acts in the capacity of a counselor to each of the clubs. In addition to the regular meetings and pro-

* A story of the St. Louis Younger Railroad Men's Conference was published in the *Railway Age* of October 25, 1924, page 739; one on the Detroit conference in the *Railway Age* of November 22, 1924, page 940; and one on the Pittsburgh conference in the *Railway Age* of November 28, 1925, page 992. Some of the concrete results of the Detroit conference were covered in an address by Roy V. Wright before the annual convention of the International Railway General Foremen's Convention in 1924. (See *Railway Age*, September 19, 1925, page 514.) An instructive address on the AREB Clubs by Warren B. King of the Great Northern appeared in the *Railway Age* of November 22, 1924, page 941.

grams, special activities are promoted. As an example of youth's acceptance of responsibility, one 19-year old boy, vice-president of the Richmond, Va., C. & O. "Young Men's Ambitious Club" said, "When we first put our club notices on the bulletin board, the older guys razzed us, but it wasn't very long before they had to go some in their meetings to beat our attendance record and none of them can beat us for 'spizz' and real interest."

Such results speak well for the careful plan of "follow up" work that has been devised by the leaders and delegates of the annual conferences. This "follow up" includes such methods as the delegate writing a full account of the conference for his immediate superior, the highest personnel or operating official, the Railroad "Y" secretary, or boys' work secretary; then telling about the conference to various railroad clubs and other organizations, apprentice clubs, schools and churches. In this way each delegate answers by action one of the national conference discussion topics, "How to Make Effective the Spirit and Work of this Conference in our Own Lives and Among the Fellows Back Home." Such results as noted above can only be achieved when restricted groups of carefully selected young men are brought together and given special opportunity for study and expression in vocational guidance, self-analysis and character building, as well as receiving vocational advice from competent counselors.

No attempt has been made in this first brief check-up or questionnaire to show the results of adult leaders arranging special young men's program nights in several of the railroad clubs, including Pittsburgh, New York and the Pacific Club. Nor has any attempt been made to tabulate the splendid results that have been achieved in the stimulation and awakened interest among the apprentice and personnel organizations of various railroad systems by delegates and adult leaders who have attended one of the three national conferences.

The "Katy Lines" sometime ago held its second annual apprentice gathering, where seven young men delegates impersonated such nationally known transportation leaders as E. T. Whiter, vice-president of the Pennsylvania Railroad, Central Region; C. E. Lindquist, general secretary of the B. of L. E.; and Roy V. Wright, managing editor of the *Railway Age*. The seven delegates made the speeches to the system gathering of M-K-T apprentices that these adult leaders delivered at Pittsburgh in 1925—at least what each boy's notebook contained of the speeches.

Boston & Albany Apprentices at West Springfield, Mass., and One of the Big New Locomotives

While young men from all departments attend the international conferences, as noted by the fact that 58 different railroad occupations were recorded in 1925, yet the apprentice group is receiving early thought previous to the 1926 conference; for instance, T. C. Gray, supervisor of apprentices on the M-K-T, writes to the Program Committee, "I am very much interested in the coming Younger Railroad Men's Conference of the Y. M. C. A., which is to be held in Omaha in November. Would it be possible to have at least one session devoted to 'apprentice training'? As there are many apprentices in attendance at these conferences, I believe the railroads would be much interested in just what the apprentices think of trades training." This bespeaks interest and an appreciation of the thinking type of delegate that is selected to attend the yearly conferences.

The M-K-T. Apprentices at Parsons, Kan., at Their Picnic in August

Following the second annual meeting of the Santa Fe System apprentices some months ago, J. H. Linn, assistant supervisor of apprentices, wrote, "As a direct result of these two meetings (St. Louis and Detroit) we have had two system conventions of our apprentices in which we have had over 150 boys from all parts of the road present." Two annual conferences of the younger men have been conducted on the Chesapeake & Ohio,* which differ from those of the M-K-T and Santa Fe in that the delegates were from all departments of the railroad and the same "set up" was used as at the annual international conferences.

The 98 organized AREB Clubs operate under a variety of names. The Shenandoah, Va., club (Norfolk & Western) is called "The Find Yourself Club"; Sacramento, Cal., designates its club as "The Southern Pacific." St. Paul, Minn., claims the honor of having the first AREB Club ever organized and it is named "The Northern Pacific Employed Boys' Club." Fort Wayne, Ind., calls its club "The AREB," as several railroad companies are represented; the Springfield, Mass., club is named "The Boston & Albany AREB Club." During the past three years so many inquiries have been received on how to organize, on the programs of the clubs, activities, etc., that a pamphlet has been prepared, outlining the best experience in organizing such clubs. This is now available for distribution.

Incidentally, answers to and correspondence in connection with the abovementioned questionnaire indicate a very evident interest in the fourth annual conference of the younger railroad men, which is to be held at Omaha, Nebr., November 19-21. The restricted quotas, by systems and local points, have been established (the conference is restricted to 300 delegates). Interested Railroad Y. M. C. A. committeemen, railroad officials and adult leaders are now selecting such of the younger railroad employees to represent their companies and communities as may have a helpful contribution to make at such a meeting and who, when they return home, will encourage that stimu'ation of ambition, character building and vocational guidance that will be helpful to their fellows in making them better men, better citizens and better railway employees.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended October 9 amounted to 1,184,862 cars, only 2,149 cars less than the peak loading for this year in the week ended September 18 and an increase of 78,826 cars as compared with the coresponding week of 1925. As compared with 1924 it was an increase of 95,906 cars. This was the twentieth week this year in which the loading has exceeded a million cars. Increases as compared with last year were reported in all districts and in all commodity classifications except livestock, which showed a decrease of 3,737 cars. As compared with 1924 increases were shown in all districts except the Central Western and in all classes of commodities except grain and grain products and livestock. Coal loading, 222,799 cars, showed an increase of 38,150 cars as compared with the corresponding week of last year and miscellaneous loading, 441,011 cars, showed an increase of 14,626 cars, while ore loading, 69,919 cars, showed an increase of 17,913 cars. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

* See *Railway Age*, April 11, 1925, page 937 and April 17, 1926, page 1085.

REVENUE FREIGHT CAR LOADING—WEEK ENDED OCTOBER 9, 1926

Districts	1926	1925	1924
Eastern	269,147	242,147	246,163
Allegheny	238,089	213,756	210,720
Pocahontas	62,698	59,972	53,719
Southern	167,720	166,171	152,354
Northwestern	183,798	167,519	164,094
Central Western	173,504	171,048	183,786
Southwestern	89,906	85,419	78,120
Total Western districts	447,208	423,986	426,000
Commodities			
Grain and grain products	48,926	43,303	62,586
Livestock	40,879	44,616	41,619
Coal	222,799	184,649	198,840
Coke	13,296	12,825	9,662
Forest products	71,184	71,033	70,307
Ore	69,919	52,006	46,509
Mdse., l. c. l.	276,848	271,219	259,562
Miscellaneous	441,001	426,385	399,871
Total	1,184,862	1,106,036	1,088,956
October 2	1,185,524	1,113,283	1,077,748
September 25	1,182,910	1,121,025	1,087,954
September 18	1,187,011	1,098,627	1,076,847
September 11	1,031,081	975,499	1,067,781
September 4	1,151,346	1,102,785	921,303
Cumulative total 41 weeks	41,622,275	40,112,263	37,868,647

The freight car surplus for the last week of September averaged 114,730 cars, including 62,202 box cars and 27,519 coal cars. In the following week, ended October 8, the surplus had been further reduced to 100,069 cars, including 55,367 box cars, 20,194 coal cars and 5,415 refrigerator cars. Shortages amounting to 924 cars also were reported, of which 440 cars were in the Southern district.

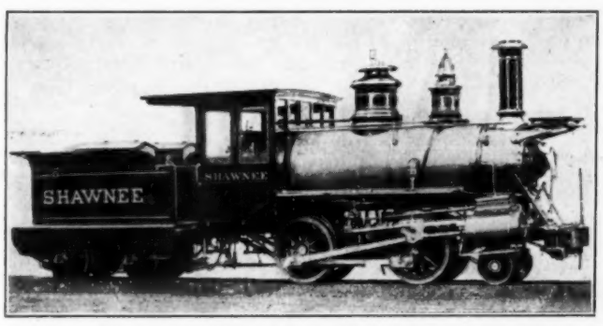
The Canadian roads for the week of October 1-8 had a surplus of 8,045 cars, including 6,700 box cars.

Car Loading in Canada

Canada's car loadings in the week ended October 9 showed an increase over the previous week of 788 cars, practically all of this being made in the eastern division. Grain increased by 1,118 cars, being the heaviest so far this year, merchandise was heavier by 425 cars and pulp and paper by 275 cars. Decreases were shown by live stock, coke, lumber, other forest products and miscellaneous freight.

Compared with the corresponding week in 1925, total loadings were heavier by 4,687 cars. Grain loading was relatively light during October last year, the increase this year being 903 cars. Coal increased by 1,257 cars and merchandise by 2,638 cars. Live stock was lighter by 1,208 cars and lumber was lighter by 171 cars, but all other commodities showed increases.

	Total for Canada			Cumulative totals to date	
	Oct. 9	Oct. 2	Oct. 10		
Commodities	1926	1926	1925	1926	1925
Grain and grain products	18,043	16,925	17,140	302,598	293,722
Live stock	2,443	2,936	3,651	84,071	92,740
Coal	9,415	9,276	8,158	226,225	149,843
Coke	331	437	326	14,450	11,219
Lumber	3,622	3,887	3,793	146,104	144,119
Pulpwood	1,788	1,517	1,601	109,429	105,851
Pulp and paper	2,441	2,166	2,051	95,721	81,529
Other forest products	3,000	3,132	2,882	124,077	112,463
Ore	2,111	2,079	1,674	69,324	55,863
Merchandise, l. c. l.	18,186	17,761	15,548	652,483	610,918
Miscellaneous	16,724	17,200	16,593	566,123	505,564
Total cars loaded	78,104	77,316	73,417	2,390,605	2,163,831



Large Diesels Built by Fairbanks-Morse

THREE new Diesel engine units, recently brought out in 480-hp., 600-hp., and 720-hp. sizes by Fairbanks, Morse & Company, Chicago, embody the same basic principles and simplicity of design as the smaller engines built by this manufacturer, described on page 749 of the *Railway Age* issue of March 14, 1925. They are of the two-cycle, single-acting, port-scavenging, airless injection type. With these fundamental principles a number of interesting features have been incorporated such as two stage combustion, a pressure lubricating system throughout, reversible and centralized control and a built-in scavenging pump.

The larger Diesels are compact and accessible. By means of the two stage combustion principle, an intimate mingling of air and fuel takes place just at the instant of the maximum compression of 500 lb. and as the temperature at this compression is approximately 1,000 deg. F. the fuel charge ignites and slow combustion begins. Due to the fact that there is not sufficient oxygen in this combustion chamber for complete combustion the fuel charge burns to carbon monoxide.

As the piston recedes on the downward stroke with the attendant rush of gases through the neck into the cylinder space, a further turbulence is created and a thorough mixing of the excess air with the carbon monoxide gas and remaining oil vapor is brought about and the final combustion of the charge to carbon dioxide gas is completed. So thoroughly has the system been worked out that flat top indicator cards of the regular Diesel type are produced.

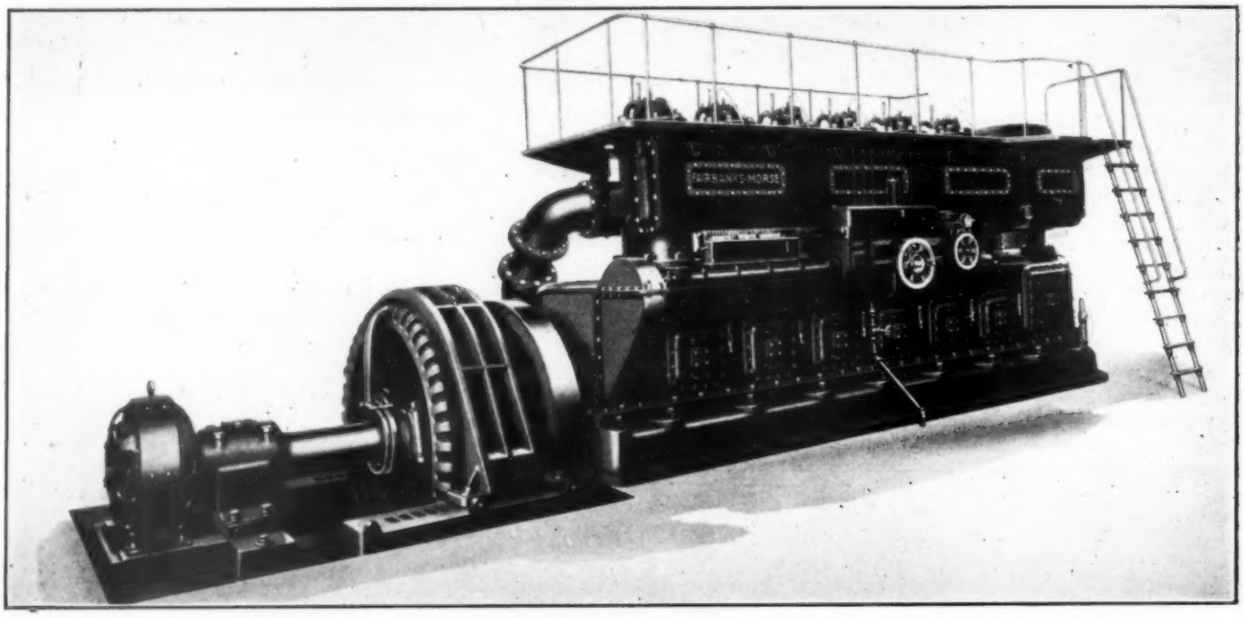
Complete control of the engine is centered in a compact and accessible unit located at the center of the engine, also housing the injection pumps and air starting mechanism.

Speed control is taken care of by a smaller hand wheel located on the governor which changes the setting of the governor spring. An indicating pointer just above the rim of this hand wheel shows whether the change in speed is slower or faster. This speed control is used when paralleling two or more Diesel electric generating sets or it may be used for drives requiring speed variation. Since it is necessary to rotate this hand wheel through several revolutions to obtain any considerable variation in the speed of the engine another small controller is placed on the governor which permits rapid variations in speed. This is useful particularly in connection with marine applications of the engine and in certain applications in the stationary plant field.

One of the outstanding features of the new design is in the way the pressure lubricating system and the arrangements for piston cooling have been worked out. This has been handled in a simple way and yet all of the main bearings, piston pins and gears are lubricated under pressure.

Each of the cylinders is lubricated at three points by a force feed lubricator. The unique feature of the cylinder lubrication is the fact that four wiper rings are set in the cylinder. These oil wiping rings are designed to eliminate the possibility of any loss of lubricating oil through the exhaust ports due to the oil working up past the piston. They also make it possible to purify the oil used for cylinder lubricant before it is again passed into the system.

This arrangement of wiper rings makes it possible to secure the same lubricating oil economy and freedom from contamination that is secured in a crosshead construction but without the attendant complications of the cross head design. No stuffing boxes are required and the construction throughout is designed for maximum simplicity.



One of Twelve 720-hp. Diesel Engines of New Design Recently Built by Fairbanks-Morse & Company

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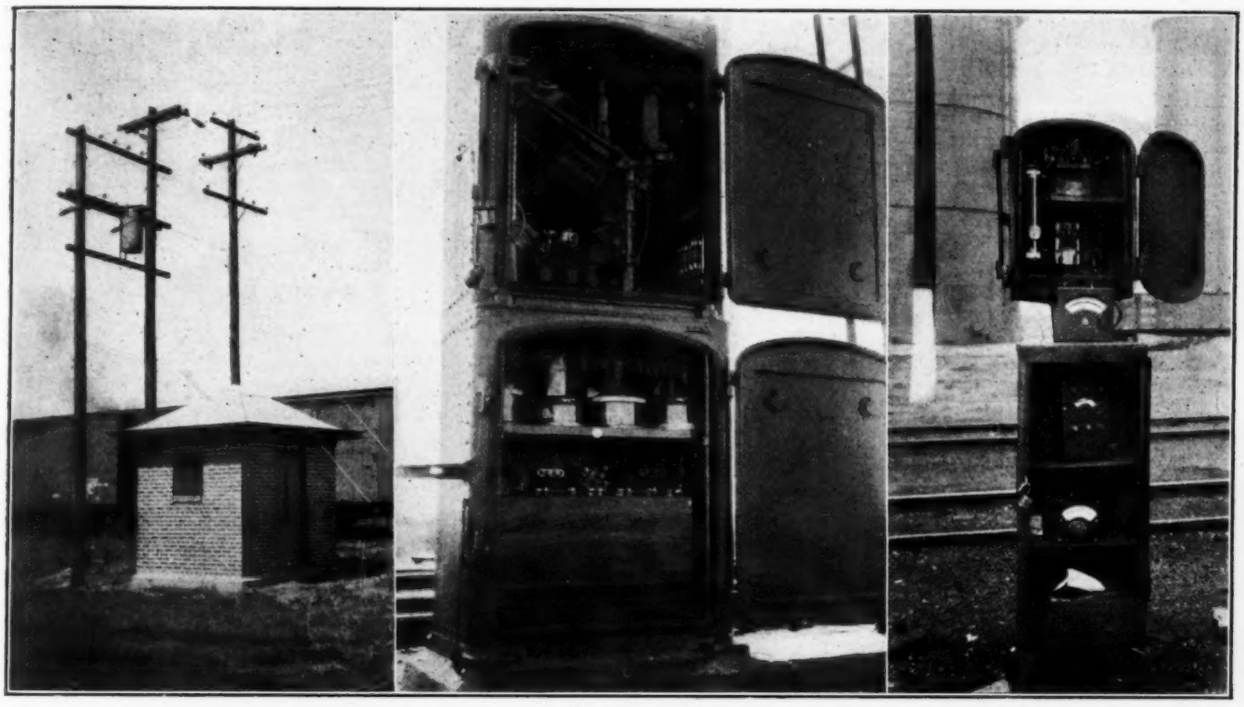
A CONCAVE SPEED TRAP, six inches deep and two feet wide, has been ordered by the Arizona Corporation Commission for installation on the highway at a grade crossing on the Atchison, Topeka & Santa Fe near Glendale, Ariz. The order provides that the trap, which is to be constructed 75 ft. from the railroad line, shall be installed in addition to automatic warning signals.



Automatic Sub-Station at North Platte, Nebr.

The Signals Were Rewired for Train Control

Test Equipment at Inbound Track, Roundhouse, Council Bluffs

Union Pacific Uses Train Control Successfully on 225 Miles

Consistent instruction of enginemen backed by detailed inspection of equipment results in excellent performance

THE Union Pacific fulfilled the requirements of the first train control order of the Interstate Commerce Commission, by placing a system of two-speed continuous train control in service on 102 miles of its double track main line between Sidney, Nebr., and Cheyenne, Wyo., on June 1, 1925. This same system of train control, as manufactured by the Union Switch & Signal Company, was extended eastward from Sidney, Nebr., to North Platte, a distance of 123 miles and placed in service on February 1, 1926.

For the first district equipped with train control from Sidney, Nebr., to Cheyenne, Wyo., 100 engines were equipped for train control operation. Passenger engines are operated straight through from Omaha to Cheyenne 509 miles; freight engines from North Platte to Cheyenne. Therefore, for the second order it was necessary to equip only 31 additional engines, including passenger engines operating between Omaha and Denver via Julesburg, and the freight engines for the Denver to North Platte service; also the freight and passenger engines for the North Platte branch, which are run over the main line for 16.2 miles.

The Training of Enginemen

In order to eliminate unnecessary delays to train operation on account of train control, special attention was given to the instruction of the enginemen concerning the operation of the train control, before the equipment was cut in for regular service. An engineman of the Union Pacific, who had been following the development of train control closely, was appointed train control instructor. Beginning seven months before the first equipment was placed in service, this instructor conducted schools at the various engine terminals. By means of charts, samples of the equipment, etc., explanations were presented, until all of the enginemen and firemen had been afforded an opportunity to learn the fundamentals of the system. By that time many of the engines were equipped, and the instructor accompanied enginemen on their runs, until all had received actual road operation instruction before the installation was placed in service.

In order to operate trains under train control protection without unnecessary delays, the enginemen must be familiar with the following performance: Under normal operating conditions in a clear block, a green light in the cab indicator is lighted. In case a signal is at stop, this cab signal indication changes from green to red when the engine passes the "B" point, which is at braking distance from the stop signal. In order to prevent an automatic application of the brakes, it is necessary that the engineman operate the acknowledging lever and start a manual reduction of brake pipe pressure sufficient to apply the brakes and reduce speed below

20 m.p.h. This application may be made by split reductions, but must total 22 lb. reduction in brake pipe pressure; otherwise an automatic application will follow.

If the engineman should be incapacitated, or for any other reason should fail to take action to acknowledge and apply the brakes within five seconds after the change from green to red in cab indication, if the speed is over 35 m.p.h., the brakes are applied by an automatic reduction of brake pipe pressure by split reductions totaling 22 lb., for freight service and 30 lb., for passenger service. This application results in the train being stopped.

In case the engineman acknowledges the change in cab indication, from green to red, and reduces speed to below

A. T. C.

UNION PACIFIC RAILROAD COMPANY

AFTER TRIP OPERATING TEST

Engine No. 2872 Date Sept. 7 1926
Left Co Bluffs At M
Arrived at M. Tested by Williams

		Train Control Load	Full Load
1. Headlight generator voltage as found		32	31
	As Left	32	31
2. Steam Pressure 195 Pounds.			

	As Found	As Left
(A) Main Reservoir Pressure	110 lbs.	110 lbs.
Brake Pipe Pressure	90 lbs.	90 lbs.
(B) Blow-down Res. Pressure	70 lbs.	70 lbs.
Pipe 4 Line Pressure	70 lbs.	70 lbs.

(B) Delay Time 42 Seconds
(C) Did Brakes Apply? yes
Brake Pipe Reduction 29 Pounds
(D) Was Split Reduction Obtained? —
4. Short Release Time 4 Seconds
5. Long Release Time 36 Seconds
6. (B) Was Automatic Application Suppressed? yes
(C) Was Automatic Application Avoided when Brakes Were Released? yes
Stop Reservoir Pressure 70 Pounds
Acknowledging Time 61 Seconds
7. (B) Did Delay Start? no
Did Cab Signal Remain Green? yes
(C) Did All Lights Go Out? yes
Did Blow-down No. 15 Reservoir Pressure Build up to 70 Pounds? yes
8. (B) Did Cab Indication Change from Green to Red? yes 4"

REMARKS:

Note:—Report on this Form, under REMARKS, all defects and corrections on pneumatic equipment. Also show work performed and material used.

Successful Operation of Train Control Depends on the Consistent Maintenance, and the Incoming Test Serves to Anticipate and Eliminate Trouble

20 m.p.h., he may proceed through the block at 20 m.p.h.

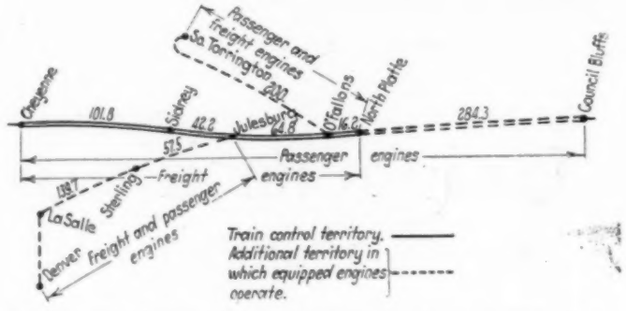
If the speed of 20 m.p.h. should be exceeded in a stop block, the brakes will be applied automatically. However, the Union Pacific has not made any change in the automatic block signal rules; therefore, the engineman is required to stop at a signal indicating stop. He may then enter the block at a speed not exceeding 6 m.p.h., being prepared to stop short of a train or obstruction in the block.

If, while running in a stop block, the red indication of the cab signal should change to green, indicating that the block is clear, the engineman continues at a speed of less than 6 m.p.h., for a train length and then may resume normal speed through the block. The purpose of keeping the speed reduced for a train length is to insure that if the train passes over a broken rail, which might have been the cause of the danger indication, the entire train would then be beyond the break before normal speed is resumed. If a switch should be thrown, or a car should drift out of a siding over the fouling point in a block ahead of an approaching train, the cab indication would change from green to red and the brakes would be applied automatically unless the engineman took action within five seconds to acknowledge and start to reduce the brake pipe pressure as explained in a preceding paragraph.

In case of an automatic brake application, the engineman should lap his valve, otherwise the automatic application will not stop at 22 lb., or 30 lb., but will exhaust the brake pipe pressure to zero. Having received the automatic application and lapped his brake valve, the engineman of a passenger train can recharge his brake pipe when the speed has been reduced below 20 m.p.h., thus releasing the brakes and permitting the train to proceed with caution at a speed under 20 m.p.h.

Train Control Tested Before Leaving Terminal

Although the train control equipment is thoroughly tested at the roundhouse, the engineman makes three



Sketch of Engine Runs Over Train Control and Non-Equipped Territory

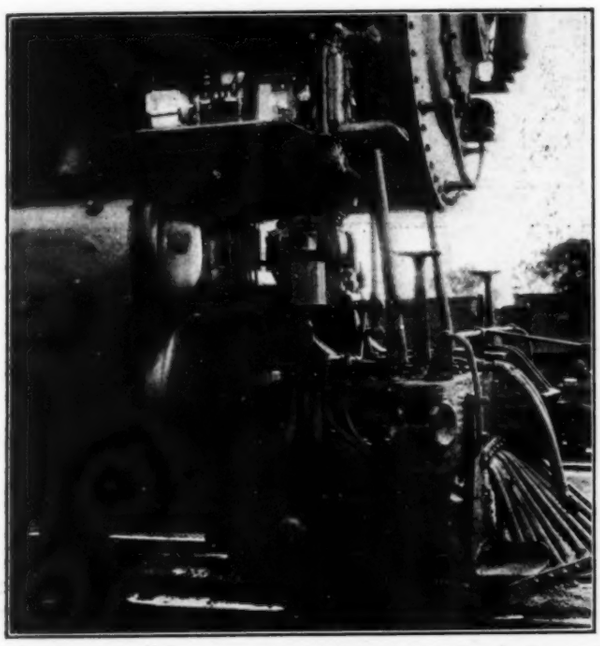
tests himself. At North Platte, Sidney and Sterling, where engine crews are changed, the tests are made as follows: After the passenger train has been inspected, the air men call for a train brake test, the engineman reverses the cut-out switch in the cab, which is equivalent to entering an occupied block, thus changing the cab indication from green to red, and initiates an automatic brake application. In view of the fact that the engine is standing still, the maximum delay time of 40 sec., is effective, and during that period, the engineman proceeds to make a brake pipe reduction of 22 lb., thus suppressing and preventing an automatic application. This operation checks the equipment and informs the engineman that he can take charge of handling of the brakes himself if he is alert when a change of indication from green to red occurs on the road.

After all of the car men are out from under the train, the engineman proceeds to make two other tests to ascertain if the apparatus will function to apply the brakes. With the equipment in the normal position, and a green light showing, the engineman again reverses the cut-out switch and allows the automatic application to complete its cycle, noting the operation of the gages and apparatus. With the apparatus set up normal, the engineman again reverses the cut-out switch, changing the green indication to red. This time he acknowledges the change by moving the acknowledgment lever, thereby preventing the automatic application in view of the fact that the

engine is not traveling at a speed of over 20 m.p.h. The last two tests are made after the train is otherwise ready to depart. The same three tests are made by enginemen on the outgoing track at Cheyenne. Also all freight engines leaving North Platte are tested as outlined above.

Special Cut-Out Features

Every train operated between North Platte and Cheyenne has train control protection. If a non-equipped



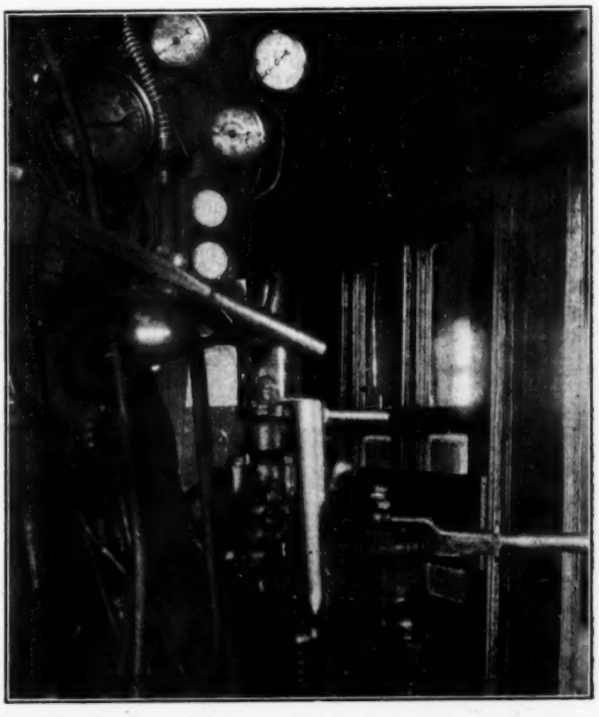
Equipment Box Open Ready for Megger Test. Governor and Drive Require But Little Attention in Regular Service

engine is run over this territory, it is double-headed behind an equipped engine. In case the train control equipment on the engine fails on the road in a manner that cannot be repaired by the engineman, he is required to run at a speed under 20 m.p.h., until he arrives at a point of communication, where he advises the dispatcher, who is the only person having authority to issue an order to cut out the train control equipment.

The application valve group is equipped with a Yale lock made for two keys. One key is carried in a holder in this group. To cut-out, the engineman inserts this key and turns it, permitting him to operate the cut-out lever. The engineman cannot remove this key, it remaining in the lock as an indication that the equipment was cut out, until the inspector at the roundhouse inspects the engine, at which time he uses his master key to remove the engine key. If, after the engine has been cut out, the engine or wayside apparatus is repaired and placed in service, the engineman can again cut in the engine apparatus and proceed under train control protection.

Eastbound passenger engines which operate through from Cheyenne and Denver to Omaha, are cut out electrically and manually by the inspector at North Platte, where the engine crews change. Likewise, westbound passenger engines are cut in service at North Platte. Engines leaving the main line train control territory at Julesburg, to pass onto the Denver line, are cut out electrically after leaving the main line, by means of the engineman reversing the cut-out switch while passing over a highly energized loop. The engine runs under this high speed cut-out to Sterling, Colo., 57.5 miles, where the apparatus is cut out manually before the engine departs for Denver.

The engines operating over the North Platte branch are cut out manually at O'Fallons. All eastbound



Special Air Gage Mounted Above Two-light Cab Signal. Note Small Acknowledgement Lever to Left of Engineman's Brake Valve

engines entering train control territory at O'Fallons are locked in service by the agent at that station, before proceeding onto the main track.

After-Trip Operating Test at Engine House

Upon the arrival of each engine at the inbound track at the roundhouse, the electrician and the pneumatic men co-operate in making the after-trip operating test of the

MONTHLY REPORT OF AUTOMATIC TRAIN CONTROL PERFORMANCE

	Sidney to Cheyenne 102 miles double track						North Platte to Cheyenne 225 miles double track					
	1925						1926					
	June	July	Aug.	Sept.	Oct.	Nov.	Feb.	Mar.	Apr.	May	June	July
Number of engines in service	64	69	72	92	76	88	88	88	94	95	94	96
Number of trips with device cut in	897	1,138	1,266	1,569	1,999	1,461	1,254	1,496	1,486	1,429	1,429	1,597
Number of trips with device cut out	3	1	1	2	4	4	3	21	13	7	6	17
Number of failures	9	7	8	7	8	9	12	13	12	16	27	27
Failures—engine equipment	7	5	5	6	7	7	9	7	12	10	7	11
Failures—roadside	2	2	3	1	1	2	3	5	1	6	20	16
Number of undesirable stops account of above failures—engine equipment	-	5	5	6	7	7	9	7	12	10	7	11
Number of undesirable stops account of above failures—roadside	7	3	7	5	3	3	5	†18	1	†18	‡33	‡28

† Undesirable stops due to short circuit on 2300 volt line. ‡ Undesirable stops due to lightning trouble.

train control equipment. The electrician makes an electrical resistance test of the wiring by means of a Megger tester. By means of this test, grounds in light sockets, field coils of the generator, etc., are located and removed before causing trouble with the train control operation. The headlight voltage is checked to see that it is not over 34 volts or under 30 volts. In order to insure satisfactory operation of train control equipment, all passenger engines have been equipped with Pyle-National Type E-3 or MO-6, and, in a few cases, Keystone turbo-generators.

The next step is to check the operation of the train control relay, which is accomplished by varying the track circuit feed of the test loop. All terminals are then checked over to insure that they are tight and no wires broken in the instrument case.

The automatic train control air man makes his tests at the same time, proceeding as follows: The delay time on the apparatus between change of indication and automatic application is checked, which should be from 34 to 44 seconds. The next step is to check the long release time, which runs from 35 to 40 seconds, and the short time release which should be 4 seconds. He also checks the suppression, automatic application and acknowledgment features and sees that the correct brake pipe reduction is made by the automatic feature. The gages are checked to ascertain that the proper pressures are carried in the train control apparatus. All pipes are then checked for leaks, and all pipes and brackets are inspected to see that they are tight. A report of this test is made, as shown in the accompanying illustration, a copy being kept as a record. Any trouble indicated by these inbound tests is located and corrected in the roundhouse. Complete detail tests are again made by both the electrician and the air man when the engine is on the departure track and ready for service.

View from Top of Cab with Train Control Valve Group and Limiting Reservoirs Right and Special Turbo-Generator at the Left

Monthly Inspection and Test

All engines are held in the roundhouse for a complete mechanical and electrical inspection once a month. Electrical apparatus, including the headlight and train control equipment is thoroughly inspected. The engine relay and amplifier units are taken to the shop and cleaned and tested. The amplifier tubes are given an emission test. The average life of tubes is 1,700 burning hours. The tubes are marked and replaced in the same position, to keep the values the same. After all equipment is assembled, a monthly inspection test is made and a report filled out. These reports are filed for reference at any time.

The pneumatic maintainer removes the application valve portion, relay portion and engineman's brake valve, which are taken to the shop for cleaning and oiling. The protection governor and axle drive are also cleaned and oiled. All of the train control piping on the engine is blown out to remove any accumulated dirt or pipe scale. The air gages are removed and tested. The feed valve is cleaned, and the safety pop valve on the No. 1 pipe line is tested. The relay brake pipe vent valve and pressure-maintaining feature are also cleaned at this period. The apparatus is then assembled and tested, and a record kept on a suitable form.

The Electrical Equipment of the Train Control System Is Removed from the Engines and Sent to Omaha Signal Shop for Overhauling Periodically

Periodical Overhauling and Heavy Repairing

If any trouble develops on the engine relay or amplifier unit, this apparatus is shipped by baggage car in special shipping cases to the Omaha signal shop, where special testing and repair equipment has been provided. At scheduled intervals, this equipment is sent in for inspection and cleaning, whether trouble has developed or not. At the signal shop, units are completely torn down, the condensers tested and the relays overhauled and adjusted. They are then returned to the point from which received.

At Cheyenne shops, a special pneumatic test rack has been provided for testing the pneumatic train control equipment. The governor drives on all engines are removed and given a general inspection and overhauling about every four months. The device is then placed on the test rack and given an operating test to see that all valves are operating properly before being applied to an engine or held for future use. In case trouble develops on any of the other pneumatic equipment at any terminal, which cannot be repaired readily, the equipment is sent to the Cheyenne shop where complete tests are made on the test rack, and the equipment is repaired.

Maintenance of Wayside Train Control Equipment

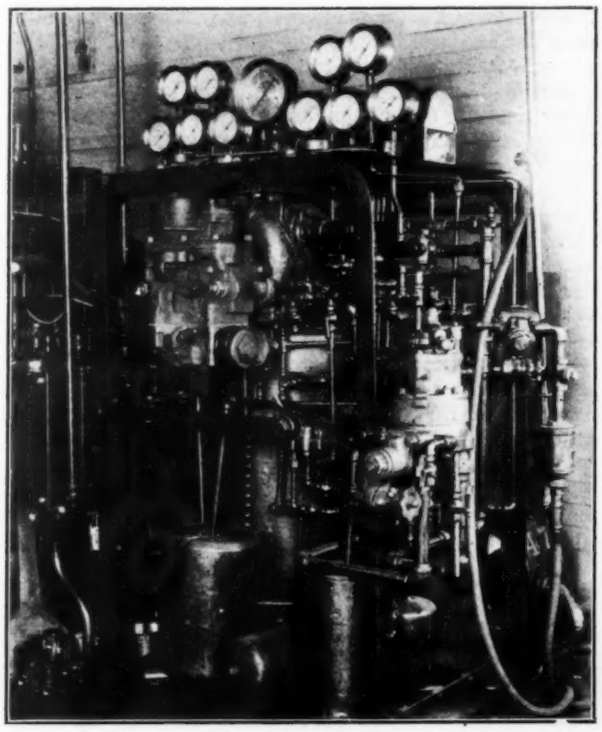
The wayside apparatus for the continuous train control was superimposed on the existing system of direct current semaphore signaling with the least possible change. In some cases signals were moved to secure braking distance between signals or between cut-sections and signals. The entire pole line was rebuilt, adding a new crossarm carrying the two No. 6 bare copper feeder wires for the 2,300-volt a.c. line to feed the train control circuits. The block signal control wires are all carried

on the lower crossarm on the field side, while all train control wires are placed on the same arm on the track side. Automatic feeder stations are located at eight different points, which will cut through the power automatically if the feed should be interrupted at the other end of the feeder section. Sectionalizing switches are placed in the power line at intervals of five miles.

At various signal locations, the 2,300-110 volt transformers reduce the voltage taken to signal cases and relay boxes within one-half mile in either direction from the line transformer. For each track circuit, a 110-6.8 volt transformer with various taps steps down the voltage for the track feed. With the installation of train control, most of the track wiring, cable wires and case wiring was renewed. The 1.8 volt feed to the track is superimposed on the existing d.c. track circuits.

Adjustment of Train Control Circuits

So far as maintenance of the d.c. signals is concerned, the duties of signal maintainers have not been changed,



Special Test Rack in Cheyenne Shops for Testing Detail Operations of Train Control Valve Group. Another Similar Rack Is Provided to Test the Governors and Drive Group

but maintainers now test and adjust the a.c. train control circuits in addition. The automatic switch boards of the power feed system are also taken care of by the maintainers when they are located on their territories.

A check is made of the track circuits about every 30 days with an engine and an output meter. A pick-up curve of the engine apparatus is run in the roundhouse and a curve plotted of the pick-up. Then the engine is run over the road in regular train service with an output meter connected, and a reading is taken while passing over each track circuit. These readings are compared with the plotted pick-up curve; and any track circuit that is either too high or too low can be adjusted later by the signal maintainer.

In order that the maintainer may check up quickly to ascertain that each track circuit is receiving a.c. feed, each motor car is equipped with a small flashlight lamp connected to the back wheels. In normal operation this lamp remains lighted as the maintainer goes over his territory, but in case a fuse is blown or a wire broken in the track circuit feed, the lamp will be extinguished, indicating that there is trouble in that track circuit. The majority of the cases of trouble experienced with the way-side train control apparatus have been caused by lightning burning out the track transformer fuses and fuses at feeder stations.

Train control maintenance is handled at four engine terminals: Council Bluffs, Iowa; North Platte, Neb.; Cheyenne, Wyo.; and Denver, Colo. The inspection and running repairs to engine equipment have been incorporated in the duties of regular roundhouse electricians and air brake maintainers. A signal inspector was used for the special training of these men, and for the inspection of the equipment in service. Special schools of instruction were conducted at all four terminals mentioned, to teach the electricians and air brake men the fundamentals of the train control equipment. These schools were held during the day on company time. During this period, three experienced signalmen were assigned as train control adjusters, to assist the electricians in inspecting the engines at roundhouses. After the train control had been in service for about one year, these men were returned to their regular signal duties. The present personnel for maintenance of engine equipment is as follows:

			Hours
Cheyenne, Wyo.—			
First trick	1	Leading A.T.C. machinist	8
	1	ATC machinist on axle drive equip.	8
	1	ATC machinist test equipment	8
	1	ATC machinist	4
	1	ATC electrical specialist	8
	1	ATC electrician	4
Second trick	1	ATC machinist	6
	1	ATC electrician	8
Third trick	1	ATC machinist	6
	1	ATC electrician	8
Sidney, Nebr.—			
	1	ATC electrician	4
North Platte, Nebr.—			
First trick	2	ATC machinists	8
	1	Electrical leader	4
	1	ATC electrician	8
Second trick	1	ATC machinist	4
	1	ATC electrician	8
Third trick	1	ATC machinist	4
	1	ATC electrician	8
Council Bluffs, Ia.—			
First trick	1	ATC machinist	6
	2	ATC electricians	4
Second trick	1	ATC machinist	6
	1	ATC electrician	4
Third trick	1	ATC machinist	6
	1	ATC electrician	4
Denver, Colo.—			
First trick	1	ATC machinist	8
	1	ATC electrical specialist	8
Second trick	1	ATC machinist	2
	1	ATC electrician	4
Third trick	1	ATC machinist	2
	1	ATC electrician	2

First Section, Philadelphia-Bar Harbor Express at Scarboro Beach, Me., on the Boston & Maine

New Hopper Cars for the C. & E. I.

BECAUSE of the increasing demand for self-clearing, center dump cars, the Chicago & Eastern Illinois recently conducted an extensive investigation to determine the type of car best suited to its requirements. As a result a contract was awarded to the Mt. Vernon Car Manufacturing Company, Mt. Vernon, Ill., for 500 new 70-ton, self-clearing steel hoppers, delivery of which is being made at the present time.

End View Showing Important Details in Construction

The assistance of a number of other railroads, who are large owners of this class of cars, was obtained in an effort to avoid the weak points which have developed in cars of similar type. Consideration was also given to the tentative suggestions of the sub-committee of the Committee on Car Construction of the A. R. A., which is working on designs for this type of car.

The specifications provide for a car similar in design to the Norfolk & Western Type HU hoppers, but with added cubical capacity, to permit full axle loading with coal such as produced in the territory served by the Chicago & Eastern Illinois. To provide for the additional capacity required, the C. & E. I. cars are being constructed approximately two feet longer than the N. & W. cars, thus providing for a capacity of 2,590 cu. ft., level full.

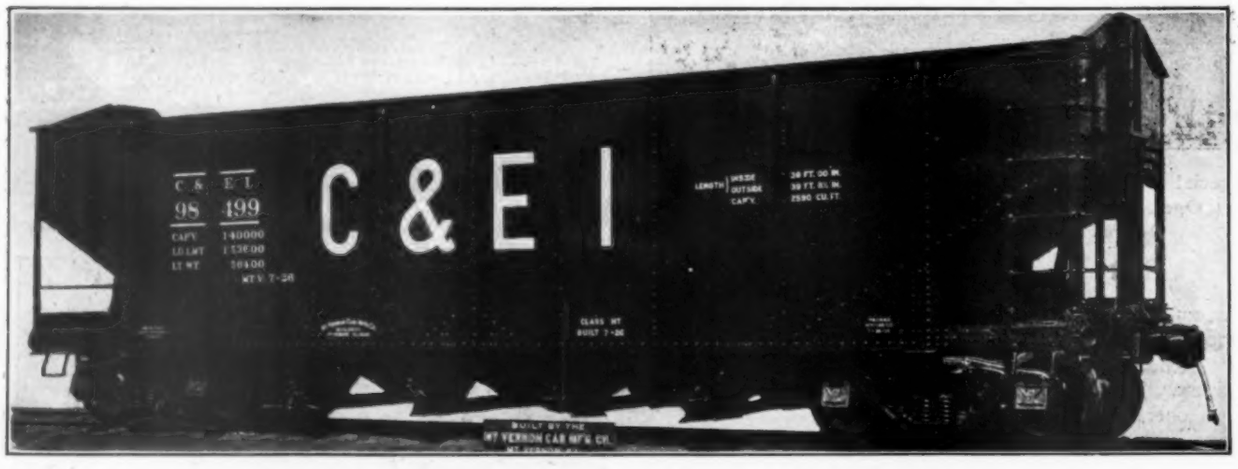
The general dimensions of the cars are as follows: Coupler length, 42 ft. 10 in.; inside length, 39 ft.; inside width, 9 ft. 6 in.; height, over all above rail, 12 ft. 3 in.

To keep the over-all height of the car within the tipple clearance of the modern coal mines which it serves, the company substituted a ratchet lever type brake for the malleable iron wheel.

The cars have four saw-tooth hoppers with doors hung crosswise of the car and operated in pairs. The door fastenings are the latest type Wine door locks. All plates, pressed steel parts and structural shapes in the body of the car are made of copper bearing steel, containing not less than .2 per cent copper. The car sides and ends are ¼-in. plate. The car bottom, individual hoppers and hopper side sheets toward the center sill are 5/16-in. plate and the hopper side sheets toward the outside of the car are ⅜-in. plates. These are ⅛ in. thicker than are often used, and are expected to increase the life and reduce the cost of maintenance of the cars.

The light weight of the car is approximately 56,400 lb., with a load limit of 153,600 lb., thus giving a ratio of load to light weight of 2.72. The car has the Dalman trucks, which provide for seven A. R. A. double coil springs to the cluster. This design is intended to overcome the trouble which has been experienced with the A. R. A. standard spring arrangement on 70-ton cars, and at the same time has provided springs which are interchangeable with springs in use on a large majority of the freight cars throughout the country.

RAILROADS OF ST. LOUIS, MO., and East St. Louis, Ill., are contemplating the establishment of eight off-track freight stations to be used by all lines, as a means of displacing the present system under which transfer companies maintain unofficial stations. Freight will be transported from the eight off-stations to the railroads by one dray company. It is expected that shippers can be saved from four to 24 hours on their consignments and they will receive a railroad receipt for outbound freight, instead of a transfer-company receipt as at present.



New 70-Ton Hopper Car with Ratio of Load to Light Weight of 27.72 lb.

I. C. C. Plans Western Rate Readjustment

Hearings to be held on class rates in No. 17,000 and sixteen pending cases

WASHINGTON, D. C.

THE Interstate Commerce Commission announced on October 18 its plans for approaching the problem of a readjustment of class rates in western trunk line territory, which the western roads had asked it to investigate with a view to obtaining an increase in what is considered a "low spot" in the western rate structure. It has decided to assign for hearing its general investigation of the rate structure, No. 17,000, under the Hoch-Smith resolution, in so far as it covers class rates in the territory involved, together with some 16 formal proceedings now pending before it on complaints, in so far as they relate to class rates to and from the points indicated in the announcement.

The initial hearing will be held on January 11 at Omaha, Neb., and after a recess of about three weeks further hearings will be held.

In an appendix to its announcement the commission has outlined a comprehensive statement of data it desires relating to the rates and traffic and transportation conditions in western trunk line territory, which it desires shall be prepared under the direction of joint committees of shippers and carriers, co-operating with the state commissions and the Interstate Commerce Commission, to be introduced but once into the record by appropriate witnesses, with a view to avoiding duplication and at the same time providing an adequate record.

The character of this data as set forth in the appendix indicates that it is proposed to conduct this proceeding more from the rate standpoint than from the revenue standpoint, which was stressed at the hearings in Ex Parte 87.

To perfect plans for the preparation and presentation of such data and other information susceptible of joint handling that may be desired by any of the parties, a preliminary conference will be held at the La Salle Hotel, Chicago, on October 28, by representatives of the federal commission with representatives of the state commissions, shippers and carriers.

The western railroads filed their petition for an investigation of class rates in western trunk line territory during the hearings on their application for a general 5 per cent advance in western freight rates and when the commission denied their general application it reserved the class rate question for later consideration. In its present announcement the commission says that western trunk line territory was not defined by the carriers in their petition but that for the purpose of this proceeding it will be understood to include the northern peninsula of Michigan, Wisconsin, Minnesota, Iowa, that part of Missouri on and north of the Missouri river, Kansas, Nebraska, North Dakota, South Dakota and that portion of Colorado and Wyoming on and east of a line running through Trinidad, Pueblo, Colorado Springs and Denver to Cheyenne, and thence over the Union Pacific to the Nebraska state line.

The petition was docketed as Ex Parte 87 (Sub-No. 1) and similar petitions, relating to intrastate rates were filed by the carriers with certain of the state commissions. In addition there are now pending before the commission several other formal proceedings concerning interstate class rates between certain points in western trunk line territory and points in official and southern territories and the state of Illinois, and a few assailing certain commodity rates and scattered class rates to or from other parts of the United States. A summary of those proceedings is set forth in an appendix to the commission's announcement. Regarding the plan of procedure determined upon the commission says in part:

> Some of the cases have been pending for considerable time, action thereon having been postponed because representatives of shippers and carriers have been endeavoring for approximately two years to agree upon a satisfactory adjustment of class rates within western trunk line territory. To determine the present situation, a public conference was held at Chicago, September 10, 1926, by representatives of the commission with representatives of state commissions, shippers and carriers. At that conference the carriers and representatives of certain shippers indicated their belief that the negotiations would eventually be successful and requested that no further steps be taken by the commission for an additional 60 or 90 days pending such negotiations. Many other shippers indicated that the commission should proceed with a broad investigation of the class rates within western trunk line territory and between that territory and official and southern territories without further delay. Resolutions were presented by representatives of state commissions of a number of western states, recommending that this commission proceed with an investigation of interstate class rates jointly with intrastate proceedings pending before or to be initiated by such state commissions. While differing as to method, apparently all parties concerned agree that the western trunk line class rate adjustment is badly in need of revision and that such revision should be brought about at the earliest possible date commensurate with proper consideration of the intricate problems involved.
>
> Merely to assign for hearing the pending cases apparently will not afford a medium for readjusting the rates involved in a satisfactory manner, as many points are not directly embraced in any of the pending proceedings although no readjustment may properly be made without including such points. The commission already has pending a general investigation, *Rate Structure Investigation*, No. 17,000, which includes, among others, all of the rates here under consideration. It has therefore determined to assign for hearing that proceeding, in so far as it covers class rates between points in western trunk line territory as hereinbefore defined, and between points in that territory and points in official and southern territories and in the state of Illinois, as well as class rates between points in Wyoming, Casper and Sheriden and east thereof, on the one hand, and points on and east of the Missouri River, on the other, with all the pending formal proceedings listed herein, except as indicated below. The initial hearing will be held on January 11, 1927, at 10 o'clock A. M. central standard time, at the Athletic Club, Omaha, Neb.
>
> It is the desire of the commission that these proceedings be handled as expeditiously as possible and with the least possible expenditure of time and money on the part of everyone concerned.

Scope of the Proceeding

> Certain of the formal complaints listed in Appendix A assail commodity rates or class rates to and from points beyond the scope of the hearings above indicated. It should be understood that such hearings will cover those complaints only in so far as they relate to class rates to and from the points indicated herein and that other issues of such complaints will be considered at separate hearings.
>
> No cases already decided have been reopened. This is not to be construed as indicating that conclusions different from

those reached in such cases may not be determined upon in the pending proceeding.

As some of the complaints assail not only all-rail but also water-and-rail rates between points in western trunk line territory, on the one hand, and official and southern territories, on the other, the present hearings will cover water-and-rail rates between such points as well as all-rail rates.

The present hearings will not embrace rates on grain, grain products or grain by-products in carloads.

Where articles now move on class rates between the points covered, interested parties will not be precluded from presenting particular evidence relating to individual commodities tending to show that some different disposition should be made of such rates than may be determined upon for class rates, although it should be understood that the present hearings do not directly embrace classification ratings, except as comprehended by No. 14625.

All less-than-carload commodity rates from and to the points involved will be considered as in issue.

It should be understood that the data outlined in Appendix B are merely suggestive and are not considered to be all-inclusive.

The assignment of these proceedings for hearing at this time is without prejudice to the continuance of negotiations between shippers and carriers, and should a reasonably complete agreement be reached such fact may be reported to the commission with such recommendations as the interested parties may consider proper, at which time further consideration will be given to the situation by the commission.

At the initial hearing the carriers should present their complete proposals and evidence in support thereof; and evidence of a general nature, above referred to, should be presented by representatives of the committees selected.

If practicable, the carriers should divide their presentation into: (1) western trunk line class rates; (2) class rates between western trunk line and official territories; and (3) class rates between western trunk line and southern territories. If this can be done, the commission should be advised not later than December 1, 1926, of the sequence in which the carriers and the committees referred to desire to make their presentation and approximately the time that will be necessary for the presentation of each of the subjects. In addition, if it is the desire of the carriers and the committees to divide their presentation in any other manner, the commission should likewise be advised on or before that date in order that notice thereof may be sent to the various parties prior to the hearing in the hope that the time of some may be saved.

After the conclusion of the first hearing as above outlined, a short recess of approximately three weeks will be taken to afford the various parties an opportunity to examine the presentations made at the first hearing for the purpose of cross-examining the witnesses introducing that testimony. Such cross-examination and presentation of evidence on behalf of shippers generally will follow the recess in such order as may be later indicated.

Expedition Desired

It is recognized by all that the class rates in western trunk line territory are in need of adjustment and present a complicated problem deserving early solution. In the light of that situation it is the earnest wish of the commission that all parties exert every effort to expedite the proceeding as much as possible.

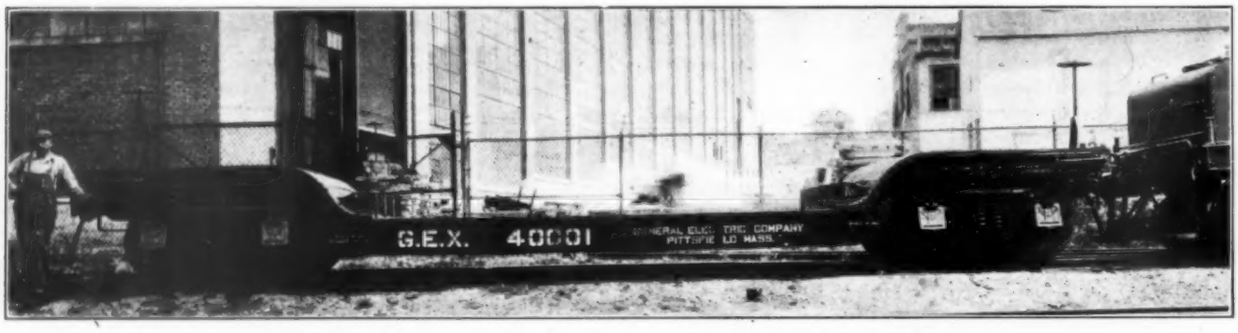
As the record promises to be lengthy, every effort should be made by all parties to condense their evidence into the smallest possible compass. Oral explanations of exhibits which duplicate at length what is shown on the face of the exhibit should be avoided. Discussion of past decisions of the commission should ordinarily be reserved for brief and argument. Evidence which is merely cumulative should be avoided, and cross-examination should be directed to the development of the facts and not allowed to degenerate into argument. Copies of exhibits should be available for all parties entering appearance, and this will necessitate a generous supply.

A proposed report will be issued.

Drop-Frame Car for General Electric Company

THE first of a new type of drop-frame car has been tested by the General Electric Company for use in shipping large apparatus. The new car is built especially for the purpose of increasing the loading distance between the rail and clearance limitations and, because of its peculiar type of construction, unusual stresses are encountered. Former drop-frame cars have been made of structural steel but, as such types of cars are believed to be inadequate to meet the growing demand for cars to carry heavier and concentrated loads, the body of the new car was made of a single steel casting. The car is provided with lugs to assist in bolting apparatus to the steel platform and to allow structural A-frames to be built if necessary to hold the top of the shipment rigid without imposing unnecessary stress on the car.

The car was designed by the General Electric Company and assembled by the American Locomotive Company, using a casting made by the Commonwealth Steel Company, St. Louis, Mo. It is designed to carry a concentrated load of 150,000 lb. The loading platform is but 22 in. above the rails, and is designed to withstand a buffing stress of one million pounds. The casting is the largest ever made by the Commonwealth Steel Company. The car is 36 ft. 4 in. long, weighs 67,100 lb. and is designed to take a 150-ft. radius curve.



Underslung Type Car with Complete Body Consisting of One Steel Casting

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THE DUTCH RAILWAYS may start bus services to supplement and feed existing railway services. It is believed that the United States will be in position to get a reasonable share of the purchases made by the railways.

THE FIRST COMPLETE locomotive to be constructed in Rumania was delivered in September to the Rumanian State Railways. It was built entirely at the Reshitza Metallurgical Works. The locomotive is a standard-gage, oil-burning type, weighing 88,000 kilograms. The Reshitza works are now equipped to turn out 80 locomotives of this type per annum, which means, it is claimed, that Rumania will no longer need to import locomotives.

Group of St. Paul Master Mechanics in Annual Conference at Milwaukee, Wis.

Competition Stimulated in St. Paul Mechanical Department

Prizes awarded at annual meetings of master mechanics and car department supervisors

STAFF meetings of the Chicago, Milwaukee & St. Paul mechanical department supervisors are held annually for the consideration of railroad problems of both local and general nature and the discussion of carefully prepared papers. The fact that these papers are available for advance study and that the discussion subsequent to their reading is recorded and later distributed for further analysis makes these papers doubly valuable. Moreover, interest is stimulated throughout the entire year by the awarding of prizes at the annual meetings for the best performances by individual divisions and shop points.

Except for the boiler foremen's staff meeting at Minneapolis, Minn., all meetings are held at Milwaukee, Wis., the supervisors meeting in 10 individual groups this year as follows: General and roundhouse foremen, June 1 to 3; boiler foremen, July 7 to 9; air brake foremen, locomotive department, July 19 to 20; air brake foremen, car department, July 21 to 22; traveling engineers, August 2 to 3; master mechanics, September 7 to 9; car department, September 20 to 22; special apprentices, October 4 to 5; chief clerks, locomotive department, October 25 to 26; chief clerks, car department, October 27 to 28.

Prizes for the best division performances, consisting of suitably embossed bronze tablets, are awarded at the master mechanics' meeting. There are 31 operating divisions on the Chicago, Milwaukee & St. Paul and records are kept on each of 12 phases of operation shown in the table which are selected as a basis for determining relative improvements in operation. Owing to differences in the character of facilities, a comparison of actual results on different divisions would hardly be a just measure of the relative efforts put forth to secure efficient operation. The plan has accordingly been chosen of basing the determination of relative merit on the improvement made at each division over the performance of that division in the preceding year.

The 12 phases of operation on which the various divisions are judged are quite comprehensive, covering in general the efficiency with which power is assigned and used, enginehouses, repair shops and power plants operated, and equipment lubricated, the thoroughness with which work is done, and the extent to which penalty overtime is permitted. The table shows how each division's performance in these particulars is recorded, together with the percentage improvement over the previous year and the rank as compared with the other divisions. The division which has the smallest number of total ranks will obviously have secured the greatest improvement in operation. First and second prizes this year went to the Terre Haute and Aberdeen divisions respectively, the Chicago and Twin City Terminals being tied for third place. The meeting this year was the sixth annual gathering of St. Paul master mechanics.

Some striking individual performances were obtained in 1926 as compared with 1924. The detailed record, of which the table shown is only a part, indicates that some divisions, for example, secured as low as 3.3 cents per mile for enginehouse expense, 6.3 cents per mile for running repairs, 7.5 cents per ton of coal through the chutes and 2.8 man-hours per engine turned. On the other hand, 301,568 miles were secured per engine failure on one division, and 2,463,420 miles per hot engine bearing on another.

Wide Range of Subjects Discussed

Some idea of the scope of the master mechanics' meeting may be obtained from the following list of subjects: Scientific assignment of power for the purpose of handling through freight trains; Relation of modern locomotive axle load and tractive force to gross weight and axle load on train hauled; Boiler requisites for modern locomotives; Fuel, water and oil consumption of steam locomotives in relation to work done;

Possibilities of reducing cost of branch line service; Comparative costs; Air brake requirements for modern service; Relative advantages of operating service by steam and electric traction; Shopping locomotives; Shop tools—relation to amount and cost of work done; Proper disposition of K1 engines; Accidents and fire prevention; Cost and use of material; Causes of boiler pitting and grooving and means of prevention, and Shop scheduling, specialization of repairs.

The 1926 meeting of the car department supervisors was the eighth annual meeting of this group which also had an imposing array of papers, a partial list of which is as follows: To what extent can the car department assist in the conservation of fuel; What economies have been effected by the use of journal truing machines; Handling, preparation and use of car equipment for various commodities, and in what way can the car department be of more assistance, also what can be done to insure better performance of time freight trains; What should be done to prevent loading cars off line having defects for which car can be transferred by connecting lines, and what should be done to prevent loading cars with lading which would make same unfit for high class lading such as flour; Keeping usable material out of the scrap pile, also proper sorting of scrap—how can this work best be handled.

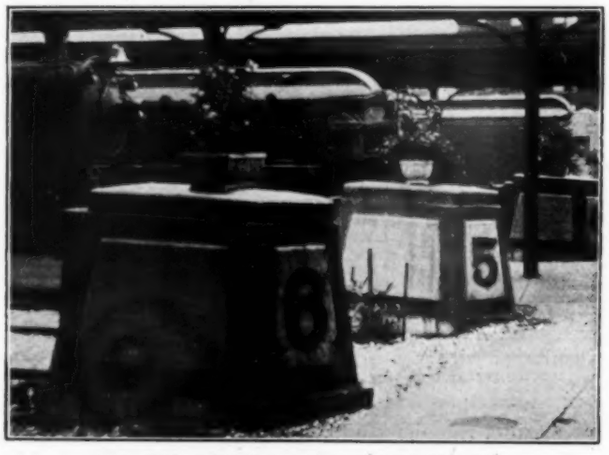
Sioux City Gets First Car Department Prize

Car department prizes are awarded on the recommendations of a committee of five, appointed to make observations throughout the year of such features as cleanliness and general efficiency of operation at car repair points. These prizes also consist of bronze tablets. At the 1926 car department meeting, the first-prize was awarded to Sioux City and second to Deer Lodge, favorable mention certificates being issued to Milwaukee coach yard, Terre Haute, Mason City, Tacoma, Atkins, Green Bay, West Clinton, and St. Paul coach yard.

No prizes are awarded nor any competition set up at the traveling engineers' meeting, but the list of subjects largely pertaining to the handling of power develops information second only to that brought out by the master mechanics. The special apprentices' meeting deserves special mention because of its unusual character and the opportunity afforded these men to increase their knowledge of practical railroading. In addition to outside speakers, 14 of the special apprentices themselves delivered papers this year representing in most cases study and painstaking observations over a period of months. The value of all of these meetings both from the point of view of the road and of the individual supervisors and apprentices has been amply demonstrated by the favorable results obtained during the past eight years.

SELECTED OPERATIONS USED IN DETERMINING FIRST AND SECOND POSITIONS FOR AWARDING DIVISION PRIZES AT THE C. M. & ST. P. MASTER MECHANIC STAFF MEETING, SEPTEMBER 7, 8 AND 9, 1926

	1924	1925	Per cent increase	Rank
	(1)—Ave. miles per active loco. per month			
1 Terre Haute	1,946	2,176	11.8	2
2 Aberdeen	2,596	2,662	2.6	17
3 Chicago Terminal	2,031	2,082	2.5	18
4 Twin City Terminal	2,110	2,230	5.7	7
	(2)—Ave. cost per mile for enginehouse expense			
1 Terre Haute	8.0	6.8	15.0	3
2 Aberdeen	8.3	7.1	14.5	5
3 Chicago Terminal	14.6	12.9	11.6	9
4 Twin City Terminal	14.2	11.5	19.0	1
	(3)—Ave. cost per mile for running repairs			
1 Terre Haute	22.3	18.8	15.7	1
2 Aberdeen	17.0	15.4	9.4	9
3 Chicago Terminal	18.0	15.6	13.3	2
4 Twin City Terminal	13.0	11.5	11.5	3
	(4)—Ave. cost per mile for class repairs			
1 Terre Haute	6.5	10.4	60.0	23
2 Aberdeen	11.4	5.4	—52.6	1
3 Chicago Terminal	9.4	10.0	6.4	9
4 Twin City Terminal	11.4	14.8	29.5	19
	(5)—Ave. cost per hp. rating of power plant operation			
1 Terre Haute	$52.35	$43.78	16.4	5
2 Aberdeen	94.36	69.59	26.3	2
3 Chicago Terminal	66.23	52.55	20.7	4
4 Twin City Terminal	56.69	50.39	11.1	9
	(6)—Ave. cost per 1,000 miles for lubrication			
1 Terre Haute	5.67	5.06	10.8	9
2 Aberdeen	4.23	3.71	12.3	7
3 Chicago Terminal	3.98	2.61	34.4	1
4 Twin City Terminal	3.85	2.98	22.6	3
	(7)—Ave. cost per ton coal through chute			
1 Terre Haute	8.4	7.5	10.7	8
2 Aberdeen	7.6	7.6	0.0	18
3 Chicago Terminal	11.6	9.3	19.8	2
4 Twin City Terminal	13.9	12.3	11.5	6
	(8)—Ave. lb. coal per 1,000 gross ton-miles			
1 Terre Haute	135.6	127.2	6.2	9
2 Aberdeen	145.2	148.8	2.5	29
3 Chicago Terminal	....	....	...	24
4 Twin City Terminal	....	....	...	26
	(9)—Ave. man-hours per engine turned			
1 Terre Haute	7.7	7.0	9.1	9
2 Aberdeen	10.9	9.3	14.7	5
3 Chicago Terminal	11.0	9.5	13.6	6
4 Twin City Terminal	10.8	10.1	6.5	14
	(10)—Ave. miles per engine failure			
1 Terre Haute	54,535	197,703	—26.3	9
2 Aberdeen	104,035	98,687	5.1	21
3 Chicago Terminal	.....	.....	...	18
4 Twin City Terminal	.....	.....	...	17
	(11)—Ave. miles per hot engine bearing			
1 Terre Haute	1,036,137	1,977,029	90.8	5
2 Aberdeen	312,104	1,282,936	311.1	1
3 Chicago Terminal	.....	.....	....	14
4 Twin City Terminal	.....	.....	....	13
	(12)—Per cent penalty overtime			
1 Terre Haute	5.4	3.1	42.6	4
2 Aberdeen	7.6	6.9	9.2	13
3 Chicago Terminal	7.6	7.9	+3.9	27
4 Twin City Terminal	8.9	8.4	5.6	16
	(13)—Total Rank			
1 Terre Haute	....	.....	...	87
2 Aberdeen	....	.....	...	128
3 Chicago Terminal	....	.....	...	134
4 Twin City Terminal	....	.....	...	134



Flowers to Welcome Incoming Passengers
Wilmington (N. C.), on the Atlantic Coast Line

Railway Advertisers Freight Rates

As a means of acquainting the public with freight rates charged on commodities consumed by the individual, the Nashville, Chattanooga & St. Louis has inserted advertisements in newspapers along its lines which have brought favorable comment because the advertisements bear a direct message from the agent located in the district. The subject of the advertisement is "The Nashville, Chattanooga & St. Louis Agent Talks About Freight Rates Here." "Railroad transportation in this county is one of the cheapest things we can buy," says Agent Blank. The first sentence of the body of the advertisement reads: "I wonder how many people know just what the freight rates are on the things bought and sold every day?" The query is answered in the negative and the remainder of the advertisement is devoted to rates on familiar commodities. Freight rates on familiar articles from the point of manufacture to the town in which the advertisement appears are given. These include shoes from Boston, men's clothes and women's dresses from New York, coffee from New Orleans, La., sugar from Savannah, Ga., meat from St. Louis, Mo., lard from Chicago, flour from Memphis, Tenn., oranges from Florida, a plow from northern Indiana, an axe from St. Louis, a sewing machine from Chicago and a ton of coal from Ravenscroft, Tenn.

Rates from the territory to larger cities also are shown. These include rates on cotton shipped to Charlotte, N. C., cattle to Louisville, Ky., hogs to Nashville, Tenn., poultry and eggs to New York and lumber to Cincinnati, Ohio.

The advertisement is summarized with the statement that the rates show that the railroad receives no more than a fair price for the essential service of bringing the products of the world to the consumer or for furnishing the transportation service that makes it possible for the country to market its products. The concluding statement asserts that the aim of the agent's office in the town and of the Nashville, Chattanooga & St. Louis as a whole, is to render good service at a fair price and to do it in a courteous manner. The friendship and cooperation of the people in the districts is appreciated and solicited.

The advertisement is signed with the name of the agent in the city in which the advertisement appears.

Considerable favorable comment has been given by newspapers along the lines of the Nashville, Chattanooga & St. Louis, following the publication of these advertisements. One newspaper stated that Agent Blank "gives some interesting facts in regard to freight rates at this place which contradicts the popular belief that the railroads are hogging all the money in the country with excessive freight rates. Railroads have their financial troubles just like the rest of us and railroad officials are intensely human. Agent Blank is one of the most popular agents on the system." Another paper stated that the advertisements are so written as to have a direct bearing on the interests and problems of freight-payers in the section. Another said, "We were pleased to print a letter written to the public by our agent, who made a close study of railroading. He has gone to the trouble to get up the cost of transportation on a great many of the commodities from various shipping points to our town and we were agreeably surprised to find them so low that actual freight can hardly be counted in the cost."

Another is rather humorous in its contents. "The freight rate is analyzed to show the low cost to the consumer. The information is a revelation to many who never thought that the freight on a pair of shoes was only eight cents, and about a cent for enough gingham to make a dress for your wife. We haven't the rate on a bathing suit, but they probably haul them at a penny a hundred, and at the present gait of styles, the freight on women's dresses will soon be reduced to one-tenth of a cent per outfit." Another, in commenting upon the advertisement, stated that these figures were a revelation to Rome, Ga.

C. & E. I. Interchangeable Train Control to be Tested

An actual road test of the interchangeability of different types of automatic train control equipment, involving the interchange of equipment of the intermittent induction types with the inert track element, is proposed by the Chicago & Eastern Illinois. This road has filed a petition with the interstate Commerce Commission for a 90-day extension from November 1 of the commission's order of July 3 permitting the operation of its trains and locomotives over the tracks of the Cleveland, Cincinnati, Chicago & St. Louis between Pana and Bridge Junction, Ill., without such locomotives being equipped with automatic train control apparatus of the type installed on the Big Four.

The C. & E. I., has equipped two of its locomotives operating over the Big Four tracks for test purposes. One carries the equipment of the General Railway Signal Company for operation over the Big Four in addition to that of the Miller Train Control Corporation for operation over the Chicago & Eastern Illinois, which is equipped with the Miller system of the ramp type. The other carries the equipment of the Union Switch & Signal Company designed for use in both ramp and induction territories.

It is stated that the results thus far indicate that the test should be extended to develop the U. S. & S., equipment further and also to determine whether the G. R. S. device can be combined with the Miller system to reduce the amount of equipment now carried on the engine. It is also desired to test the recently developed induction system of the Miller company to ascertain whether it will give satisfactory service in the Big Four territory as well as in the C. & E. I., territory with less engine equipment than is now necessary with either of the two devices under test. The C. & E. I. has placed an order with the Miller company for an engine equipment of the induction type, which is intended to operate over the G. R. S. inductors between Pana and St. Louis and over the Miller ramp system as installed on the C. & E. I.

The Western Australian Railways showed a loss of £31,982 for the year ended June 30, 1926, compared with a profit of £190,565 for the preceding year. The loss is attributed mainly to increased salaries and wages, shorter hours and reductions in rates. The decrease in earnings equalled .56d. per train mile, while operating expenses and interest increased by 9.98d. per train mile.

Rail Motor Cars for passenger traffic on the Victorian Railways are being used more and more extensively. The railway commissioners are considering the adoption of oil-electric drive coaches to take the place of the single-ended gasoline coaches of comparatively low power which have been in use for some time.

The Railroads and the Public*

A better understanding than ever before by the public of railroad problems now exists

By Alfred P. Thom
Vice-Chairman and General Counsel, Association of Railway Executives

BETTER understanding on the part of the public at large is becoming more and more apparent on every hand.

Recognition of an obligation to the public has grown upon and has been accepted by the railroads. Recognition has grown upon and has been accepted by the public of the truth that an exercise of power carries with it a correlative obligation of justice and that, aside from justice to the carriers, the highest and most essential interest of the public can be served only by a policy which will enable the carriers to provide adequate and efficient transportation.

Thus, conscious of their mutual dependence upon one another and each persuaded of the fair and honest purpose of the other, the public and the carriers are co-operating with mutual good will in promoting the economic development of the nation.

The better understanding to which I have referred, so essential to the happiness, to the welfare and to the successful progress of our people, is unmistakably manifested in many ways. I shall here refer, by way of illustration, to only two of them.

Railroads Popularly Owned

First. The ownership of the railroads has passed from the few to the many. At the end of June, 1910, the stockholders of steam railroads, exclusive of switching and terminal companies, numbered 416,508. By the end of the year 1921, the number had more than doubled, and on December 31, 1925, it is estimated that there were 910,000. I am informed by competent economic authority, that it would be conservative to say the total number of railroad security holders, bond and stock, is today practically 2,000,000.

It is interesting to note that, according to the report of the Comptroller of the Currency for 1925, mutual savings banks held, as investments, railroad bonds amounting to $634,512,000 distributed among 611 reporting banks, that loan and trust companies held, as investments, $292,000,000 of railroad bonds distributed among 1,680 reporting companies; and that, according to reports of the Association of Life Insurance Presidents, the investments of life insurance companies in railroad stocks and bonds grew from $545,375,636 in 1900 to $2,194,932,000 in 1925.

From an analysis by the Bureau of Railway Economics of the treasurers' reports of 76 representative American colleges or universities, it appears that these institutions in 1924 had investments in American railway securities aggregating $167,568,275, representing 28.1 per cent of their total productive investments; while in the case of individual schools this percentage ran as high as 90.8 per cent.

With this wide diffusion of popular ownership, and with this important interest in railroad securities of banks, trust companies, life insurance companies, educational and other institutions, estimated, including fire insurance companies, to include 50,000,000 of our people, it may now be said that the railroads, while not government owned, are popularly owned—an unmistakable indication of the better understanding and relationship between the public and the railroads which in recent years have come into existence, and also a demonstration that the condition of the railways is not only a matter of enduring interest to the public because of the public interest in adequate transportation, but, in a very real sense, because of the relation of the securities issued by them to the investments of the people and to the soundness of the financial structure of the nation.

Co-operation Between Railroads and Shippers

Second. The second manifestation, to which I shall refer, of a better relationship and understanding between the public and the railroads, is the establishment by voluntary action of shippers and their representatives throughout the country of Regional Advisory Boards to co-operate with the Car Service Division of the American Railway Association in promoting a better understanding of their mutual problems and a better and more adequate transportation service.

The establishment and the work of these boards have marked an important departure from the old methods of dealing between the carriers and their patrons, and constitute one of the most notable and useful advances ever made in the field of transportation.

This co-operative movement, voluntarily established and maintained by representatives of the users of transportation and the railroads, has resulted in a spirit of understanding and in a quality of service heretofore unknown—service so acceptable to the public that not a single complaint as to service is now upon the calendar of the Interstate Commerce Commission. It has marked an epoch and heralded a new era in the field of transportation.

The progress in this and in many other directions towards a fair understanding and a sound relationship between the railroads and the public is most encouraging, and I look forward with hope and with confidence to continued progress in a matter so essential to the welfare of both.

No intelligent business man can fail to see how the highest interests of the public are involved in not permitting the crippling of the transportation service, which would throw the present condition of prosperity back into the chaos, confusion, and ruin of 1903 and 1917.

Readjustment of Transportation Philosophy Has Become Necessary

But now we have come to the time when, in the evolution of our civilization, a readjustment of our transportation philosophy has become necessary. The needs of the public now cared for by the carriers are not the

* From an address before the Associated Industries of Massachusetts at Boston, Mass., on October 20, 1926.

same as in the earlier days. The genius of man, in utilizing the forces of nature, has wrought a miracle and has created a new world to be enjoyed and to be served.

Easy and adequate means of communicating intelligence—telegraph, telephone, wireless and radio—have converted the industrial world into "one vast economic neighborhood." No longer are producers content with their near-by markets. They know, and must be given the opportunity to enjoy, the advantages and the opportunities of the markets of the world. As a consequence, local transportation facilities are no longer adequate. What the productive energies of the people need is the kind of transportation which will place their product in any market, however distant. This means the co-ordination of facilities, not their separation into small, independent and unco-ordinated units. The producer in California desiring to reach eastern markets, is not satisfied with a service which is perfect to the Mississippi river but inadequate beyond. He has as much interest in the transportation service east of the Mississippi river as he has in the transportation service of his originating line—in other words, his essential interest is in transportation as a whole. His transportation wants are a unit and are as wide as the nation—perhaps as wide as the commercial world. To be adequate to his needs, the transportation agencies which serve him must be co-ordinated, so as to furnish, as near as may be, a unit of service to correspond with his unit of needs. This means that the economic requirements of the public demand harmony in policies, co-ordination in effort and co-operation in service on the part of the carriers which serve them. The railroads, to furnish an acceptable service, must act together and as nearly as a unit as conditions will permit.

Consolidation Policy

Recognition of this economic necessity has given rise to a policy of consolidation of the railways. It is realized that a harmonious policy is more easily possible and is more readily to be expected when there are only 20 to 25 responsible managements than when there are 180. So that reasonable and proper consolidations, subject, as to each proposal, to the approval of the Interstate Commerce Commission, has come to be the recognized policy of the government, and finds expression in the recommendations of the President and in the statutes passed by Congress. On the part of the carriers it is recognized that in case the policy of consolidations already declared is made practicable and possible by additional enabling legislation, it will be their responsibility, inasmuch as the control of their administrative policies will have become centralized, to decentralize management so as to keep responsible operators, with adequate authority, close to the people whom they serve.

This unification of carriers into a reduced number of competent and well balanced systems, is one of the great problems which now awaits solution. Any solution which is proposed must be prepared to stand the test of whether or not it is in the public interest—a test which must always be accepted and must always be controlling and supreme in any proposal respecting the regulation of the railroads. What is in the public interest must, however, always be determined by a broad, fair and comprehensive survey of the field with a recognition of the truth that nothing can be in the public interest which will deprive it of adequate and efficient transportation service.

The railroads are convinced that, in order to be practical and successful, any system of unification that is adopted must be permissive as contradistinguished from compulsory—that consolidations cannot be forced, but must originate in and grow out of practical commercial and business considerations and conditions and be the products of the natural application of sound economic laws.

New Agencies of Transportation

We are also confronting problems created by the introduction of new agencies of transportation, such as the motor vehicle on the highway, the airplane and greatly expanded and improved systems of waterways. While the future and the consequences of none of these can as yet be forecast with certainty or with accuracy, they all possess possibilities which cannot be ignored. At least one of them—the motor vehicle on the highway—has already made a demonstration which entitles it to rank as a permanent and useful addition to our transportation facilities. It has even now become a substantial competitor in the transportation field for the carrying of persons and commodities. This competition could not be of moment unless it had been found that the new agency meets in some way a public want.

The other agencies referred to may easily become—in fact, artificial waterways are now to some extent—substantial competitors of the rail carriers. What will be the attitude of the railroads in respect to them?

I think you will find their attitude to be that, in the solution of these problems, the public interest must control. The public right to the selection of the agency of transportation which it wants and which it finds most useful must be respected, and the railroads will be no party to an effort to strangle and destroy, under the guise of regulation, a new agency of transportation which the public wants and which can serve it usefully. All that they will ask is that the terms of competition shall be fair and that nothing shall be done which will impair or destroy existing agencies essential to the commerce of the people. Whatever is done must be done to improve transportation, not to impair or destroy it. No one can properly ask that any of these problems be solved in a way to give special privilege or special protection to any private interest. The supreme test must always be the interest of the public.

In the present development of human agencies, it will not and cannot be denied that the existence and competency of transportation service by steam railroads is essential to the welfare of the public. It is the only form of transportation fixed to a given route and which cannot be discontinued. It is the only agency adequate to the carriage of bulk articles in large quantities and for great distances. Nothing has as yet been suggested as an adequate substitute, and its preservation "in full force and vigor" is essential to the growth and commerce of the country.

The railroads will be prepared to meet these problems as they arise, in the spirit of frank recognition that the public must have any form of transportation which it wants and which it finds useful; that no effort at strangulation or destruction can be tolerated, but that the terms of competition should be fair and that the proponents of any new proposal must be content to submit it to the test of whether or not it is in the public interest.

THE NEW YORK STATE BARGE CANAL carried freight during the week ending October 16, to a total amount of 100,205 tons, the largest movement recorded for a single week. The total quantity of freight moved over the canal during the present season down to October 19, was 1,890,190 tons, which is slightly more than the total to the same date last year. The number of boats navigating the canal this year is 745, as compared with 801 in 1925.

General News Department

The arbitrators of the wage questions at issue between the eastern roads and their conductors and trainmen will meet in New York City on October 26.

The American Railway Association will hold its regular meeting at the Biltmore Hotel, New York City, on Wednesday, November 17, beginning at 1:30 p. m.

The Pittsburgh Railway Club will hold its annual meeting on October 28, at the Fort Pitt hotel, Pittsburgh, Pa., at which time election of officers will take place and special entertainment will be provided by members.

The Canadian Railway Club will hold its next meeting at the Windsor hotel, Toronto, on November 9. A paper entitled "Transportation" will be read by C. R. Moore, general superintendent of transportation of the Canadian National.

The New England Railway Club will hold its annual "Canadian night" on November 9, at the Copley-Plaza hotel, Boston, Mass., at which time a paper will be read by W. M. Neal, assistant to the vice-president of the Canadian Pacific.

The Railway Fire Protection Association, at its annual meeting in New Orleans, La., on October 14, elected officers as follows: President, G. S. Giles, fire protection engineer of the Union Pacific; vice-president, W. F. Steffens, superintendent of fire prevention of the New York Central; and secretary-treasurer, R. R. Hackett, chief inspector of the Baltimore & Ohio.

Representatives of the shop crafts of the International-Great Northern and representatives of the road organized a system board of adjustment for the differences which arise among employees and employers, at Palestine, Tex., on October 13. The employees and the management have equal representation on this board and the board will decide disputes growing out of personal grievances or applications of shop-crafts schedules and practices in cases which cannot be adjusted through customary channels.

Adaptation of industrial research to railroads was the subject presented to the Western Railway Club at its regular monthly meeting in Chicago on October 18, by Harry G. Miller, associate editor of the Railway Review. Mr. Miller pointed out in an interesting and comprehensive way the possibilities as well as some of the limitations of adapting industrial research to improved railroad operation. The meeting, which was one of the best attended in recent months, was also notable for the large amount of enthusiastic discussion from the floor, following the reading of the paper.

L. & N. Veterans' Club

At a meeting which was held in Louisville, Ky., on September 18, there was formed a veterans' club, to which will be eligible all employees of the Louisville & Nashville who have been in the service 25 years—a development from the clubs, on different divisions, which have been functioning for some time past.

The president of the system club is Captain J. D. Keen; senior vice-president, R. C. Gorey, Sr.; secretary, J. L. Stark; Treasurer, P. P. Doll.

C. R. Gray on Transportation Problems

Railroads are suffering from the unfair competition of motor vehicles and waterways, according to Carl R. Gray, president of the Union Pacific, speaking at the Transportation Section luncheon of the Illinois Chamber of Commerce at the Hotel LaSalle, Chicago, on October 19. This form of transportation, he said, should be regulated the same as rail carriers are regulated. In reviewing the development of railroads Mr. Gray made three divisions: The period of private operation when the railroads made their own rules, the period of regulation and that of federal control. The first, he said, was not successful because of its newness and the second failed because of the stringent measures involved, which produced strangulation instead of regulation. Federal control has convinced the people of the value of private control. Private control is based upon the principle that people must have efficiency.

Pennsylvania Shopmen Granted Increase

The Pennsylvania, on Wednesday of this week, announced that the shopmen of the company, numbering more than 43,000 mechanics, helpers and apprentices had been granted an advance in pay of three cents an hour effective October 16, bringing the general rate up to 76 cents, the same as that granted by the New York Central September 1. This advance follows several weeks' conference at Pittsburgh. The committees representing the employees were elected by the employees themselves from among their own number.

Marines to Guard Mails

Following a recent mail robbery at Elizabeth, N. J., Postmaster General New has announced that a force of marines will be employed at railway terminals and on postal cars and mail trucks transporting valuable registered mail, until such time as the post office department itself can organize and equip a sufficient force of men to adequately protect the mails from depredations of bandits.

The Portmaster General also issued orders to have prepared at once new specifications for postal cars (furnished by the railroad companies). It is not considered feasible to make over the cars now in use but it is stated that the new cars hereafter provided must meet the new specifications.

Queen Marie's Special Train

The special train in which the Queen of Roumania is now traveling from the Atlantic to the Pacific Coast, has been prepared by the Baltimore & Ohio. It started on its first trip from Jersey City, N. J., over the Central of New Jersey, on Thursday of this week. It is called the "Royal Roumanian" and consists of ten cars, including three Pullman sleeping cars and the business cars of Daniel Willard, president of the Baltimore & Ohio, and Howard Elliott, chairman of the Northern Pacific.

Queen Marie, whose party includes about 20 persons, and whose transcontinental trip will take six weeks, is to be carried, with her party, over each road in the route for the sum of one dollar; or an estimated cost for the whole trip of $28, according to information given out at the office of the Interstate Commerce Commission at Washington. It is said that San Francisco and other California cities have been cut out of the itinerary because the Southern Pacific declined to join in the arrangement for carrying the party at the nominal rate of one dollar.

The Five-Day Week in Practice

The shop of Jenkins Brothers, valve manufacturers, Bridgeport, Conn., has had worked a five-day week, as recently discussed by Henry Ford, since May 22, 1922. The plant employs about 700 men. Both proprietors and employees are said to be enthusiastic in praise of the arrangement. The employees work 48 hours a week, the same as they did when the week was spread over six days, but they have all day Saturday, as well as Sunday, to themselves. The usual schedule is 9½ hours a day for four days and ten hours on the fifth day. The plan, having been under discussion for some time, was finally submitted to a vote of the employees in the month above named, and the favorable vote was almost unanimous.

Charles V. Barrington, vice-president of Jenkins Brothers, reviewing the four years' experience with the arrangement, declares it an absolute success. Inconvenience from absentee employees is greatly reduced and the records show that the production per hour is improved. There have been no complaints whatever, and it is apparent that any proposal to change back to the six-day week would meet with vigorous protest.

National Safety Council Meeting

The fifteenth annual safety congress of the National Safety Council will be held at Detroit, Mich., on October 25 to 29. The Steam Railroad Section will hold its sessions on October 26, 27 and 28. On October 26, the reports of committees, including membership, accident causes and remedies, poster, publicity, prevention of highway accidents and public relations, will be considered. C. W. Frey, superintendent of car shops of the Michigan Central, Detroit, Mich., will address the meeting on "Preventing Accidents in the Railway Car Shop," and a response will be given by Harry Guilbert of the Pullman Company. W. H. Jones, assistant director of safety and first aid of the Canadian National, Montreal, Que., will speak on "First Aid and Its Relations to Safety," and T. H. Carrow, supervisor of safety of the Pennsylvania, will respond.

On the second day J. T. Loree, vice-president of the Delaware & Hudson, will address the meeting, and Isaiah Hale, supervisor of safety of the Atchison, Topeka & Santa Fe, will respond. Victor Parvin, superintendent of the Ann Arbor, will speak on "What the Superintendent Can Do to Promote Safety Work"; response by D. G. Phillips, superintendent of safety of the Wabash. G. G. Dowdall, chief medical surgeon of the Illinois Central, will address the meeting on "The Surgeon's Viewpoint on Returning the Injured Employee to Service," and W. A. Booth, director of safety and first aid of the Canadian National, will make a response. At the luncheon on this day, W. A. McGonagle, president of the Duluth, Missabe & Northern, will make an address.

(*Continued on page* 790)

OPERATING REVENUES AND OPERATING EXPENSES OF CLASS I STEAM ROADS IN THE UNITED STATES

(For 185 Steam Roads, Including 13 Switching and Terminal Companies)

For the Month of August, 1926 and 1925

Item	United States		Eastern District		Pocahontas Region		Southern Region		Western District	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Average number of miles operated	236,906.30	236,573.35	59,240.26	59,463.01	5,554.34	5,544.44	39,046.96	38,722.15	133,064.74	132,843.75
Revenues:										
Freight	$428,627,599	$403,356,191	$185,367,909	$178,615,062	$22,673,581	$20,792,684	$53,830,391	$51,579,793	$166,755,718	$152,368,652
Passenger	a98,913,363	b104,034,270	51,733,226	53,099,283	1,992,808	2,207,559	12,634,490	14,229,197	32,552,839	34,498,231
Mail	7,604,326	7,653,478	2,893,450	2,921,367	189,782	187,402	1,144,503	1,117,216	3,376,591	3,427,493
Express	11,538,321	10,578,650	5,539,079	4,890,481	249,252	231,918	1,093,499	1,389,428	4,656,491	4,066,823
All other transportat'n	18,468,693	17,377,326	10,488,896	9,869,463	306,864	217,560	1,016,912	940,428	6,656,021	6,349,875
Incidental	12,945,561	11,946,134	6,238,644	5,687,382	486,006	356,833	1,172,707	1,133,100	5,048,204	4,768,819
Joint facility—Cr.	1,129,619	846,971	454,999	271,239	15,382	11,792	148,015	135,980	511,223	427,960
Joint facility—Dr.	604,792	299,320	128,187	d 3,347	2,179	1,948	36,347	34,385	238,079	266,334
Ry. operat'g revenues	578,822,690	555,493,700	262,588,016	255,357,624	25,911,496	24,003,800	71,004,170	70,490,757	219,319,008	205,641,519
Expenses:										
Maintenance of way and structures	81,180,931	77,503,539	35,275,851	33,823,938	3,527,897	3,606,754	10,959,106	10,132,108	31,418,077	29,940,739
Mainten'ce of equipm't	107,863,564	105,499,971	51,872,153	50,119,290	4,835,245	5,287,991	14,090,099	13,655,470	37,066,067	36,437,220
Traffic	9,790,064	8,980,668	3,702,792	3,416,756	266,421	221,543	1,688,234	1,537,287	4,132,617	3,805,082
Transportation	181,842,860	178,979,461	85,025,426	83,655,884	6,418,305	5,979,766	23,943,298	23,140,572	66,455,831	66,203,239
Miscellaneous operat'ns	5,045,482	4,921,706	2,266,405	2,130,300	81,412	82,809	488,432	504,510	2,209,233	2,204,087
General	15,249,543	14,291,377	6,989,017	6,298,549	515,801	417,666	2,047,742	1,875,139	5,696,983	5,700,023
Transportation for investment—Cr.	1,642,622	1,278,370	198,489	155,495	83,665	106,361	301,524	299,685	1,058,944	716,829
Ry. operat'g expenses	399,329,822	388,898,352	184,933,155	179,289,222	15,561,416	15,490,168	52,915,387	50,545,401	145,919,864	143,573,561
Net revenue from railway operations	179,492,868	166,595,348	77,654,861	76,068,402	10,350,080	8,513,632	18,088,783	19,945,356	73,399,144	62,067,958
Railway tax accruals	36,373,382	32,665,297	15,612,246	14,264,184	1,964,386	1,316,046	4,649,781	4,592,446	14,146,969	12,492,621
Uncollectible ry. rev's.	108,776	154,997	52,194	88,899	2,620	7,196	14,701	16,168	39,261	42,734
Ry. operating income	143,010,710	133,775,054	61,990,421	61,715,319	8,383,074	7,190,390	13,424,301	15,336,742	59,212,914	49,532,603
Equipm't rents—Dr. bal.	7,639,899	7,071,589	3,602,239	3,823,668	d 329,298	d 631,872	359,927	141,354	4,057,031	3,738,439
Joint facility rent—Dr. balance	2,312,540	1,759,956	1,248,906	918,398	93,051	93,540	120,965	89,515	849,618	658,503
Net railway operating income	133,008,271	124,943,509	57,139,276	56,973,253	8,619,321	7,728,722	12,943,409	15,105,873	54,306,265	45,135,661
Ratio of expenses to revenues (per cent)	68.99	70.01	70.43	70.21	60.06	64.53	74.52	71.70	66.53	69.82

For Eight Months Ended with August, 1926 and 1925

Average number of miles operated	236,878.84	236,590.05	59,325.85	59,520.74	5,548.26	5,539.23	38,913.06	38,706.49	133,091.67	132,823.59
Revenues:										
Freight	3,077,846,593	2,901,616,994	1,369,957,439	1,305,773,360	161,883,294	142,317,164	434,724,272	402,466,135	1,111,281,588	1,051,060,335
Passenger	c701,340,661	e700,944,552	349,680,693	346,857,742	14,805,513	15,317,902	105,617,520	101,130,908	231,236,835	237,638,000
Mail	62,825,827	63,533,798	23,832,331	24,360,094	1,648,292	1,658,126	9,476,886	9,129,240	27,868,318	28,386,338
Express	92,695,518	90,041,433	43,833,483	42,574,865	2,029,958	2,129,136	12,530,931	13,036,312	34,301,146	32,301,120
All other transportat'n	136,668,222	130,972,937	77,512,315	74,608,984	1,841,586	1,626,405	8,033,676	7,595,279	49,280,645	47,142,269
Incidental	86,632,951	81,752,584	43,327,820	40,147,352	3,368,389	2,757,758	10,550,260	9,584,003	29,386,482	29,263,471
Joint facility—Cr.	8,735,587	6,816,163	3,517,187	2,889,880	112,766	126,152	1,138,716	1,076,964	3,966,918	2,723,167
Joint facility—Dr.	3,182,751	1,678,262	1,056,096	567,131	17,850	16,961	272,978	274,082	1,835,827	820,088
Ry. operat'g revenues	4,163,562,608	3,974,000,199	1,910,605,172	1,836,645,146	185,671,948	165,915,682	581,799,383	543,744,759	1,485,486,105	1,427,694,612
Expenses:										
Maintenance of way and structures	574,588,433	540,863,711	241,913,138	228,908,204	25,325,088	23,580,156	83,725,158	77,463,124	223,625,049	210,912,227
Mainten'ce of equipm't	855,305,031	840,887,427	412,413,894	404,925,417	39,174,792	39,613,380	112,729,407	105,943,196	290,986,938	290,405,434
Traffic	75,554,675	69,717,684	27,534,331	25,928,885	1,981,744	1,804,981	13,527,391	12,386,164	32,511,209	29,597,654
Transportation	1,438,608,298	1,416,458,509	680,746,396	668,222,976	48,952,528	46,597,651	202,466,696	189,054,977	506,442,678	512,582,905
Miscellaneous operat'ns	37,436,024	35,415,569	17,198,704	16,028,519	734,587	704,102	4,645,103	4,152,819	14,857,630	14,530,129
General	123,106,773	115,782,699	56,585,986	51,149,718	4,041,255	3,723,526	16,011,157	15,090,479	46,468,375	45,818,976
Transportation for investment—Cr.	10,468,597	7,929,093	1,260,934	1,191,615	348,176	436,847	2,021,288	1,428,099	6,838,199	4,872,532
Ry. operat'g expenses	3,094,130,637	3,011,196,506	1,435,131,515	1,393,972,104	119,861,818	115,586,949	431,083,624	402,662,660	1,108,053,680	1,098,974,793
Net revenue from railway operations	1,069,431,971	962,803,693	475,473,657	442,673,042	65,810,130	50,328,733	150,715,759	141,082,099	377,432,425	328,719,819
Railway tax accruals	253,420,509	232,323,404	104,843,548	97,240,495	13,110,964	10,053,133	35,028,115	31,764,899	100,437,882	93,264,877
Uncollectible ry. rev's.	1,061,328	1,156,104	523,245	553,193	25,709	42,742	127,484	149,970	384,890	410,199
Ry. operating income	814,950,134	729,324,185	370,106,864	344,879,354	52,673,457	40,232,858	115,560,160	109,167,230	276,609,653	235,044,743
Equipm't rents—Dr. bal.	53,828,333	50,142,941	30,144,409	28,623,682	d 4,809,211	d 4,077,287	9,113,090	5,708,059	19,380,045	19,888,487
Joint facility rent—Dr. balance	16,177,635	15,053,688	7,590,185	7,072,238	761,849	734,135	964,016	908,680	6,861,585	6,338,635
Net railway operating income	744,944,166	664,127,556	332,372,270	309,183,434	56,720,819	43,576,010	105,483,054	102,550,491	250,368,023	208,817,621
Ratio of expenses to revenues (per cent)	74.31	75.77	75.11	75.90	64.56	69.67	74.09	74.05	74.59	76.98

a Includes $4,044,499 sleeping and parlor car surcharge. b Includes $3,852,201 sleeping and parlor car surcharge. c Includes $27,841,319 sleeping and parlor car surcharge. d Deficit or other reverse items. e Includes $25,715,018 sleeping and parlor car surcharge.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Freight Operating Statistics of Large Steam Roads—Selected Items for August, 1926,

Region, road and year	Average miles of road operated	Locomotive-miles: Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotive and tender	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany	1926 407	222,267	237,459	26,410	5,076	70.2	258,045	102,670	117	17	12.7	17
	1925 404	244,614	269,273	34,968	5,159	69.5	264,755	105,171	118	20	14.4	5
Boston & Maine	1926 2,143	455,739	521,363	47,673	12,547	72.2	619,972	257,018	313	90	22.3	42
	1925 2,253	520,102	598,473	59,859	13,185	71.1	666,996	281,499	349	84	19.5	58
N. Y., New H. & Hartf.	1926 1,892	501,510	523,113	30,789	14,168	69.6	723,140	299,502	281	54	16.2	30
	1925 1,892	500,965	525,038	34,197	13,921	68.2	727,269	305,922	289	55	16.0	29
Great Lakes Region:												
Delaware & Hudson	1926 875	367,392	494,036	52,839	10,478	64.7	665,612	331,823	250	41	14.0	80
	1925 875	413,198	565,172	57,704	11,315	66.1	734,251	380,324	250	40	13.9	69
Del., Lack. & Western	1926 999	576,494	665,805	84,071	18,765	70.9	1,049,743	479,214	255	49	16.1	22
	1925 993	574,297	676,260	84,913	18,214	70.3	996,128	450,545	298	49	14.0	49
Erie (inc. Chic. & Erie)	1926 2,323	1,016,040	1,113,091	121,765	39,229	66.2	2,338,196	1,019,257	571	104	15.4	133
	1925 2,325	973,987	1,091,815	107,340	38,620	68.2	2,291,913	1,044,681	615	103	14.3	178
Lehigh Valley	1926 1,346	598,332	659,563	80,957	19,615	66.5	1,172,230	549,841	397	83	17.3	54
	1925 1,346	608,349	672,487	72,547	19,452	67.8	1,150,593	549,075	428	85	16.5	94
Michigan Central	1926 1,835	602,013	619,280	22,289	21,008	62.5	1,145,150	421,950	266	41	13.4	73
	1925 1,826	562,716	577,326	17,575	19,684	63.2	1,068,746	396,291	314	39	11.0	112
New York Central	1926 6,482	2,023,639	2,286,937	139,772	79,386	63.4	4,839,818	2,147,007	1,203	292	19.5	389
	1925 6,478	2,078,975	2,334,590	157,695	78,523	62.1	4,857,563	2,154,843	1,199	331	21.6	336
New York, Chic. & St. L.	1926 1,665	643,885	651,408	6,837	21,138	67.4	1,146,197	455,442	231	48	17.1	47
	1925 1,669	639,451	653,659	7,258	20,652	66.3	1,132,231	452,741	232	63	21.2	46
Pere Marquette	1926 2,179	460,498	467,185	4,944	11,838	64.7	687,460	296,193	187	27	12.6	15
	1925 2,198	421,853	432,023	7,678	10,713	64.9	616,275	279,485	194	14	6.8	33
Pitts. & Lake Erie	1926 231	131,470	133,521	1,313	4,734	66.1	354,833	208,223	66	16	19.6	17
	1925 231	122,108	124,284	1,235	4,157	64.5	311,919	179,997	76	15	16.4	34
Wabash	1926 2,497	741,319	767,102	11,472	24,470	69.6	1,314,497	541,769	319	64	16.8	67
	1925 2,497	676,600	708,492	12,527	22,400	69.3	1,239,143	528,319	326	64	16.3	74
Central Eastern Region:												
Baltimore & Ohio	1926 5,197	2,038,430	2,356,720	189,869	61,532	62.6	4,057,848	1,973,443	1,032	202	16.4	109
	1925 5,196	1,961,492	2,303,334	169,541	59,402	64.5	3,863,761	1,921,073	1,004	252	20.1	95
Central of New Jersey	1926 691	268,526	298,718	36,622	8,168	59.8	541,621	261,659	219	43	16.3	43
	1925 691	302,815	334,272	39,950	7,753	59.0	528,723	255,267	242	35	12.7	36
Chicago & Eastern Ill.	1926 945	260,520	260,770	4,156	7,675	62.9	458,101	205,231	130	39	23.3	50
	1925 945	246,312	246,966	3,463	7,379	66.3	426,830	198,486	145	21	12.7	68
Clev., Cin., Chic. & St. L.	1926 2,374	773,461	816,122	22,516	25,776	62.2	1,671,640	791,946	343	82	19.3	38
	1925 2,381	766,506	813,304	19,640	25,001	62.7	1,619,396	777,445	358	78	17.8	53
Elgin, Joliet & Eastern	1926 460	131,443	138,866	5,341	3,895	65.4	298,149	158,033	78	15	16.1	2
	1925 460	120,680	127,146	4,439	3,836	66.6	283,732	151,401	68	20	22.5	3
Long Island	1926 393	46,377	51,355	12,902	683	57.3	43,359	17,067	43	13	23.4	...
	1925 393	51,718	55,163	13,480	725	58.4	45,865	18,386	42	11	20.3	...
Pennsylvania System	1926 10,883	4,879,980	5,335,461	407,223	147,208	64.6	9,775,976	4,719,261	2,710	507	15.8	360
	1925 10,879	4,619,811	4,996,572	363,988	137,451	65.3	9,004,037	4,374,490	2,665	720	21.3	314
Reading	1926 1,129	610,801	667,681	67,600	17,010	61.7	1,165,790	595,231	355	69	16.2	77
	1925 1,132	689,105	756,959	70,469	18,645	61.8	1,300,676	678,933	394	73	15.7	95
Pocahontas Region:												
Chesapeake & Ohio	1926 2,650	1,270,357	1,343,108	45,838	42,816	56.9	3,468,436	1,893,198	539	105	16.3	29
	1925 2,627	1,255,700	1,322,711	46,482	40,127	56.6	3,187,566	1,759,593	482	100	17.1	6
Norfolk & Western	1926 2,231	957,843	1,170,519	50,718	34,437	60.1	2,847,080	1,588,199	576	52	8.3	115
	1925 2,231	912,429	1,112,426	38,676	30,809	59.5	2,593,350	1,393,607	598	61	9.3	149
Southern Region:												
Atlantic Coast Line	1926 4,931	749,317	759,648	11,668	18,256	59.5	1,086,519	433,810	438	51	10.4	87
	1925 4,859	760,889	780,854	14,128	18,943	63.8	1,072,709	441,016	381	62	14.0	51
Central of Georgia	1926 1,905	362,664	367,708	7,742	8,246	67.4	470,074	208,149	155	18	10.5	3
	1925 1,907	372,149	373,323	5,470	8,087	71.2	439,744	201,191	150	11	6.6	21
I. C. (inc. Y. & M. V.)	1926 6,555	1,945,812	1,962,634	46,688	56,210	64.0	3,538,953	1,537,434	755	100	11.7	17
	1925 6,555	1,961,559	1,974,976	37,918	55,891	64.3	3,478,581	1,525,547	786	109	12.2	32
Louisville & Nashville	1926 5,021	1,772,036	1,855,098	59,158	36,873	59.7	2,550,821	1,244,215	589	115	16.3	13
	1925 5,027	1,873,348	1,987,798	64,549	37,350	62.1	2,503,245	1,237,558	622	101	14.0	18
Seaboard Air Line	1926 3,904	542,104	555,450	6,737	13,677	61.2	801,566	324,791	263	32	10.8	29
	1925 3,752	543,713	560,447	7,751	13,734	65.9	765,627	322,248	227	22	8.8	4
Southern Railway System	1926 8,050	2,180,817	2,216,849	38,205	53,244	64.1	3,019,426	1,227,167	1,082	162	13.0	33
	1925 8,157	2,057,549	2,103,382	38,804	50,503	66.9	2,792,577	1,163,099	1,062	146	12.1	93
Northwestern Region:												
Chic. & North Western	1926 8,457	1,545,619	1,594,218	26,751	39,798	62.1	2,376,162	994,962	763	150	16.4	128
	1925 8,469	1,577,685	1,626,274	30,574	40,281	63.0	2,389,433	987,946	732	210	22.3	96
Chic., Milw. & St. P.	1926 11,178	1,685,752	1,785,766	97,136	50,741	64.2	2,925,772	1,250,396	859	174	16.8	190
	1925 11,202	1,710,576	1,820,026	94,828	51,740	63.2	3,004,048	1,303,194	891	178	16.6	136
Chic., St. P. Minn. & Om.	1926 1,724	311,544	337,319	12,656	6,489	69.7	345,984	147,982	170	29	14.7	2
	1925 1,819	367,825	391,643	16,659	7,386	70.8	390,867	172,824	168	36	17.5	4
Great Northern	1926 8,138	892,462	923,964	56,153	34,424	60.3	2,222,690	1,043,439	558	156	21.8	111
	1925 8,232	941,958	974,607	53,578	32,965	60.0	2,074,829	967,320	577	168	22.5	90
M., St. P. & S. Ste. M.	1926 4,372	520,727	536,952	5,697	13,704	68.1	732,908	328,916	202	36	10.5	21
	1925 4,372	591,816	606,851	6,388	14,869	67.3	793,182	357,629	291	51	15.0	18
Northern Pacific	1926 6,510	930,790	986,625	56,693	31,625	66.5	1,791,817	746,893	501	137	21.5	67
	1925 6,522	932,663	980,560	51,936	29,669	65.6	1,701,694	729,687	530	159	23.0	87
Oreg.-Wash. R. R. & Nav.	1926 2,161	239,227	257,330	27,114	7,176	70.5	422,115	196,299	143	23	13.8	7
	1925 2,175	209,963	225,569	22,958	6,315	71.6	356,855	164,532	139	23	14.1	10
Central Western Region:												
Atch., Top. & S. Fe (incl. P. & S. F.)	1926 10,244	1,953,243	2,091,829	110,395	61,990	59.8	3,892,528	1,401,668	810	147	15.4	99
	1925 10,045	1,691,718	1,808,465	102,122	53,821	63.7	3,161,471	1,137,461	810	175	17.8	176
Chicago & Alton	1926 1,022	328,484	358,600	6,612	8,629	62.2	515,912	213,060	138	22	13.9	24
	1925 1,022	318,806	358,695	5,602	8,268	61.2	498,414	203 838	134	23	14.9	27
Chic., Burl. & Quincy	1926 9,349	1,575,594	1,632,317	59,107	48,744	62.5	2,875,313	1,286,347	821	173	17.4	83
	1925 9,338	1,620,418	1,689,669	70,114	48,136	61.7	2,911,483	1,320,128	821	176	17.7	85
Chic., Rock I. & Pacific	1926 7,564	1,365,476	1,419,822	17,475	35,217	67.0	1,974,195	842,505	546	147	21.2	49
	1925 7,561	1,392,671	1,452,612	15,935	33,788	64.0	1,934,059	801,558	566	149	20.8	44
Denver & R. G. Wn.	1926 2,575	288,201	349,353	65,107	7,988	65.7	476,755	202,802	251	36	12.6	32
	1925 2,577	258,186	312,741	60,736	6,943	67.7	410,500	185,794	265	37	12.1	42
Oregon Short Line	1926 2,537	348,814	374,048	31,798	10,268	61.1	638,316	258,454	192	23	10.6	40
	1925 2,444	344,552	358,746	22,635	9,707	65.1	586,023	254,090	192	29	13.1	47
Sou. Pac.—Pac. Lines	1926 8,582	1,620,938	1,789,240	286,222	50,085	63.8	3,023,732	1,152,421	790	163	17.1	169
	1925 8,513	1,566,089	1,716,771	253,170	46,252	62.0	2,825,328	1,096,198	759	179	19.1	66
Union Pacific	1926 3,691	1,183,217	1,211,712	63,991	44,724	61.9	2,661,234	914,556	466	52	10.1	115
	1925 3,688	1,060,891	1,091,036	67,232	40,614	62.2	2,368,454	816,907	465	77	14.1	168
Southwestern Region:												
Gulf, Colo. & S. Fe	1926 1,897	406,233	434,334	10,978	11,973	59.9	813,357	378,673	141	10	6.7	4
	1925 1,897	281,066	288,635	5,647	8,245	62.7	505,164	217,314	121	20	14.2	15
Mo.-Kans.-Tex.	1926 1,787	281,027	284,788	5,904	10,184	61.3	585,107	226,468	97	29	22.8	26
	1925 1,787	262,855	262,989	2,923	9,590	62.8	538,623	209,141	113	22	16.1	34
Mo.-Kans.-Tex. of Tex.	1926 1,389	203,722	210,586	4,240	5,828	65.4	344,281	151,906	104	28	21.0	39
	1925 1,389	180,002	188,950	3,200	4,822	61.6	278,142	108,820	129	21	14.2	62
Missouri Pacific	1926 7,288	1,409,170	1,458,800	45,228	41,642	66.1	2,405,171	1,045,079	548	84	13.2	1
	1925 7,278	1,384,303	1,431,295	44,603	39,134	66.5	2,260,320	1,003,136	553	97	14.9	5
St. Louis-San Francisco	1926 4,895	815,468	830,800	13,704	20,626	62.3	1,215,118	499,910	438	60	12.0	84
	1925 4,819	894,862	920,654	15,003	21,073	63.6	1,223,465	506,275	428	68	13.8	28
Southern Pacific Lines (in Tex. and La.)[1]	1926 4,469	678,912	680,051	2,877	15,424	69.8	858,836	367,682	265	63	19.2	55
	1925 4,427	690,269	690,440	4,653	16,312	68.0	902,797	384,000	269	60	18.3	41
Texas & Pacific	1926 1,953	289,796	289,829	1,221	8,019	64.1	460,567	172,496	150	31	17.3	34
	1925 1,953	316,997	316,997	2,193	8,251	63.7	479,388	191,739	145	42	22.4	12

[1] Includes Franklin & Abbeville, Galveston, Harrisburg & San Antonio, Houston & Shreveport, Houston & Texas Central, Houston East & West Texas, Iberia & Vermilion, Lake Charles & Northern, Louisiana Western, Morgan's La. & Tex. R. R. & S. S. Co., and Texas & New Orleans.

Compared with August, 1925, for Roads with Annual Operating Revenues Above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotive and tender	Gross tons per train, excluding locomotive and tender	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles including locomotive and tender	Locomotive miles per locomotive day
New England Region:													
Boston & Albany.....1926	2,410	5,213	7,623	5.9	14,959	1,161	462	20.2	434	30.6	8,139	167	63.3
1925	2,448	6,114	8,562	3.0	14,212	1,082	430	20.4	396	27.9	8,395	179	71.5
Boston & Maine.....1926	13,307	13,754	27,061	7.4	14,451	1,360	564	20.5	306	20.7	3,868	125	45.5
1925	13,634	12,938	26,572	9.8	14,160	1,282	541	21.3	341	22.5	4,031	129	49.0
N. Y., New H. & Hartf..1926	18,247	19,348	37,595	17.6	17,352	1,442	597	21.1	257	17.5	5,107	112	53.3
1925	21,071	19,735	40,806	22.3	16,693	1,452	611	22.0	242	16.1	5,216	120	52.5
Great Lakes Region:													
Delaware & Hudson.....1926	8,336	6,364	14,700	5.8	22,057	1,812	903	31.7	728	35.5	12,230	148	60.6
1925	8,505	7,185	15,690	7.4	21,365	1,777	920	33.6	782	35.2	14,018	157	69.1
Del., Lack. & Western...1926	14,868	8,692	23,560	4.8	21,938	1,821	831	25.5	656	36.2	15,469	125	79.7
1925	16,392	8,087	24,479	3.3	20,541	1,735	785	24.7	593	34.1	14,643	153	70.8
Erie (inc. Chic. & Erie)..1926	33,369	20,507	53,876	8.2	27,099	2,301	1,003	26.0	610	35.5	14,155	114	59.0
1925	37,289	20,573	57,862	8.3	26,646	2,353	1,073	27.1	582	31.6	14,492	114	53.9
Lehigh Valley 1926	21,107	10,050	31,157	6.1	25,514	1,959	919	28.0	569	30.5	13,182	138	49.8
1925	19,873	8,937	28,810	6.2	25,035	1,891	903	28.2	615	32.1	13,162	141	46.9
Michigan Central 1926	14,080	17,260	31,340	5.0	26,648	1,902	701	20.1	434	34.6	7,418	103	67.3
1925	14,451	18,408	32,859	4.8	27,081	1,899	704	20.1	389	30.6	7,001	102	54.4
New York Central.....1926	62,572	73,936	136,508	3.6	28,371	2,392	1,061	27.0	507	29.6	10,684	103	52.4
1925	68,675	68,749	137,424	4.6	27,376	2,337	1,036	27.4	506	29.7	10,731	109	52.6
New York, Chic. & St. L..1926	11,953	11,261	23,214	7.4	23,941	1,780	707	21.5	633	43.6	8,824	100	76.4
1925	13,075	11,322	24,397	6.1	22,883	1,771	708	21.9	599	41.2	8,752	104	72.4
Pere Marquette 1926	9,572	11,436	21,008	3.6	17,397	1,493	643	25.0	455	28.1	4,385	101	71.1
1925	9,403	9,996	19,399	4.8	15,962	1,461	663	26.1	465	27.4	4,101	103	68.0
Pitts. & Lake Erie.....1926	12,476	9,424	21,900	6.6	28,606	2,699	1,584	44.0	307	10.6	29,020	100	53.2
1925	15,246	6,403	21,649	7.0	28,277	2,554	1,474	43.3	268	9.6	25,686	64	44.4
Wabash 1926	14,089	12,013	26,102	2.9	25,808	1,773	731	22.1	670	43.5	6,999	109	65.6
1925	14,287	12,062	26,349	3.1	24,283	1,831	781	23.6	647	39.6	6,825	116	59.6
Central Eastern Region:													
Baltimore & Ohio.....1926	65,457	36,338	101,795	3.4	20,434	1,991	968	32.1	625	31.1	12,248	148	66.6
1925	72,032	37,861	109,893	8.3	20,050	1,970	979	32.3	564	27.0	11,926	150	63.5
Central of New Jersey...1926	18,083	11,965	30,048	5.2	18,515	2,017	974	32.0	281	14.7	12,217	138	41.3
1925	16,806	11,278	28,084	5.6	16,206	1,746	843	32.9	293	15.1	11,918	147	43.6
Chicago & Eastern Ill....1926	12,828	5,381	18,209	21.3	22,768	1,758	788	26.7	364	21.6	7,005	116	50.6
1925	14,251	4,642	18,893	17.3	22,079	1,709	806	26.9	339	19.0	6,775	125	48.6
Clev., Cin., Chic. & St. L.1926	16,170	22,367	38,537	6.8	26,745	2,161	1,024	30.7	663	34.7	10,761	108	63.7
1925	19,227	19,216	38,443	5.2	25,653	2,113	1,014	31.1	652	33.5	10,534	111	61.7
Elgin, Joliet & Eastern...1926	9,046	7,318	16,364	6.1	15,143	2,268	1,202	40.6	312	11.7	11,083	120	50.0
1925	9,724	7,610	17,334	7.0	17,577	2,351	1,255	39.5	282	10.7	10,622	113	48.2
Long Island 1926	1,999	6,125	8,124	0.9	5,306	935	368	25.0	68	4.7	1,400	208	36.7
1925	1,955	5,769	7,724	1.0	5,133	887	356	25.4	77	5.2	1,508	201	42.4
Pennsylvania System 1926	205,438	92,226	297,664	10.2	21,471	2,003	967	32.1	511	24.7	13,988	119	57.6
1925	213,046	87,749	300,795	11.4	20,998	1,949	947	31.8	459	22.6	12,971	119	51.1
Reading 1926	25,586	14,623	40,209	3.1	20,837	1,909	975	35.0	478	22.1	17,005	143	56.0
1925	22,851	15,349	38,200	2.8	21,083	1,887	985	36.4	573	25.5	19,354	145	57.2
Pocahontas Region:													
Chesapeake & Ohio.....1926	31,614	12,092	43,706	2.9	29,581	2,730	1,490	44.2	1,397	55.5	23,044	88	69.5
1925	29,396	11,309	40,699	3.7	25,760	2,538	1,401	43.9	1,393	56.2	21,605	100	75.9
Norfolk & Western.....1926	30,664	10,585	41,249	1.6	37,449	2,972	1,658	46.1	1,242	44.8	22,960	130	62.7
1925	28,833	9,014	37,847	3.7	34,887	2,842	1,527	45.2	1,188	44.1	20,147	129	56.4
Southern Region:													
Atlantic Coast Line.....1926	20,405	11,000	31,405	4.1	18,693	1,450	579	23.8	446	31.5	2,838	110	50.9
1925	19,520	12,544	32,064	4.3	17,722	1,410	580	23.3	444	29.9	2,904	113	57.9
Central of Georgia.....1926	5,023	7,298	12,321	6.9	17,214	1,296	574	25.2	545	32.0	3,525	143	70.0
1925	4,027	7,470	11,497	6.0	15,727	1,182	541	24.9	564	31.9	3,404	142	75.9
I. C. (inc. Y. & M. V.)..1926	39,683	27,459	67,142	4.4	23,101	1,819	790	27.4	739	42.2	7,566	117	75.8
1925	44,704	24,763	69,467	6.1	22,269	1,773	778	27.3	708	40.3	7,507	121	72.6
Louisville & Nashville....1926	43,148	18,890	62,038	12.7	17,011	1,439	702	33.7	647	32.1	7,993	145	87.8
1925	42,078	18,712	60,790	13.9	16,106	1,336	661	33.1	657	31.9	7,941	148	91.5
Seaboard Air Line.....1926	12,841	8,561	21,402	2.4	17,308	1,479	599	23.7	490	33.7	2,683	127	61.5
1925	10,976	10,065	21,041	2.9	16,285	1,408	593	23.5	494	32.0	2,770	135	73.6
Southern Railway System.1926	52,753	27,418	80,171	5.3	18,085	1,385	563	23.0	494	33.4	4,918	148	58.5
1925	52,585	27,947	80,532	6.2	17,954	1,357	565	23.0	466	30.2	4,600	145	57.2
Northwestern Region:													
Chic. & North Western...1926	48,539	28,573	77,112	7.3	19,347	1,537	644	25.0	416	26.8	3,795	120	57.3
1925	50,816	27,743	78,559	10.3	18,917	1,515	626	24.5	405	26.2	3,766	119	56.7
Chic., Milw. & St. P....1926	53,985	23,903	77,888	6.7	21,564	1,736	742	24.6	518	32.7	3,608	124	58.8
1925	55,609	25,769	81,378	7.7	20,948	1,756	762	25.2	517	32.5	3,753	129	57.8
Chic., St. P. Minn. & Om.1926	3,092	8,052	11,144	12.2	14,345	1,111	475	22.8	428	27.0	2,770	122	56.8
1925	3,331	8,331	11,662	11.9	13,073	1,063	470	23.4	478	28.9	3,065	137	64.8
Great Northern 1926	42,844	14,804	57,648	7.0	29,129	2,491	1,169	30.3	584	31.9	4,136	108	44.3
1925	46,381	14,917	61,298	7.3	24,872	2,203	1,027	29.3	509	28.9	3,791	114	44.5
M., St. P. & S. Ste. M...1926	20,410	6,882	27,292	5.4	16,379	1,407	632	24.0	389	23.8	2,427	101	51.9
1925	20,847	7,707	28,554	4.6	15,583	1,340	605	24.1	404	25.0	2,640	103	57.8
Northern Pacific 1926	36,846	8,826	45,672	6.8	24,678	1,928	802	23.6	528	33.6	3,701	128	52.7
1925	38,000	9,443	47,443	6.6	22,552	1,825	782	24.6	496	30.8	3,609	125	48.3
Oreg.-Wash. R. R. & Nav.1926	7,457	5,319	12,776	4.3	20,135	1,764	821	27.4	496	25.7	2,930	161	55.2
1925	7,273	4,575	11,848	4.8	19,707	1,700	784	26.1	448	24.0	2,441	173	49.5
Central Western Region:													
Atch., Top. & S. Fe 1926	57,256	28,866	86,122	4.7	26,479	1,993	718	22.6	525	38.8	4,414	107	74.3
(incl. P. & S. F.).....1925	59,853	17,851	77,704	6.3	25,205	1,869	672	21.1	472	35.1	3,653	113	62.6
Chicago & Alton.....1926	9,633	5,959	15,592	6.4	19,034	1,571	649	24.7	441	28.7	6,725	142	73.4
1925	9,764	5,646	15,410	5.2	18,131	1,563	659	24.7	427	28.3	6,434	143	74.6
Chic., Burl. & Quincy...1926	47,881	21,913	69,794	5.3	23,438	1,825	816	26.4	595	36.0	4,439	123	54.9
1925	52,901	21,460	74,361	7.5	22,412	1,797	815	27.4	573	33.9	4,560	129	56.9
Chic., Rock I. & Pacific..1926	32,993	23,470	56,463	9.1	18,234	1,446	617	23.9	461	30.0	3,593	130	66.9
1925	35,104	21,607	56,711	10.2	17,452	1,389	576	23.7	456	30.0	3,420	137	66.3
Denver & R. G. Wn.....1926	10,728	5,640	16,368	3.5	17,311	1,654	704	25.4	400	24.0	2,541	183	46.7
1925	11,595	5,120	16,715	5.0	16,162	1,590	720	26.8	358	19.8	2,325	196	39.9
Oregon Short Line.....1926	7,886	5,858	13,744	6.1	23,460	1,830	741	25.2	607	39.4	3,286	113	60.9
1925	8,399	5,306	13,705	6.1	22,348	1,701	737	26.2	598	35.1	3,353	121	55.6
Sou. Pac.—Pac. Lines...1926	33,080	35,573	68,653	5.4	21,977	1,865	711	23.0	541	36.9	4,332	123	70.3
1925	31,808	35,730	67,538	5.7	19,886	1,804	700	23.7	524	35.6	4,154	128	67.8
Union Pacific 1926	20,896	11,900	32,796	10.1	37,168	2,249	773	29.4	900	71.0	7,993	105	79.4
1925	19,223	11,625	30,848	8.5	35,321	2,233	770	20.1	854	68.2	7,146	107	68.9
Southwestern Region:													
Gulf, Colo. & S. Fe.....1926	9,701	7,429	17,130	3.2	26,307	2,002	932	31.6	713	37.6	6,439	98	94.8
1925	7,718	4,579	12,297	4.1	24,654	1,797	773	26.4	568	34.4	3,695	102	67.5
Mo.-Kans.-Tex. 1926	8,094	4,356	12,450	5.3	28,370	2,082	806	22.2	586	43.0	4,088	86	74.6
1925	8,678	4,573	13,251	4.9	25,958	2,049	796	21.8	509	37.2	3,775	90	63.7
Mo.-Kans.-Tex. of Tex...1926	307	10,892	11,199	8.3	21,745	1,690	746	26.1	438	25.7	3,527	96	52.8
1925	273	11,048	11,321	9.6	18,952	1,545	605	22.6	310	22.3	2,527	103	41.1
Missouri Pacific 1926	27,040	24,255	51,295	5.5	21,501	1,707	742	25.1	657	39.6	4,626	117	76.8
1925	30,056	21,733	51,789	8.2	19,333	1,633	725	25.6	625	36.7	4,446	121	73.3
St. Louis-San Francisco..1926	20,238	13,207	33,445	4.2	18,706	1,490	613	24.2	482	32.0	3,294	135	54.8
1925	20,217	13,133	33,350	4.5	17,517	1,367	566	24.0	490	32.1	3,389	146	60.9
Southern Pacific Lines 1926	10,874	14,552	25,426	6.1	17,299	1,265	542	23.8	466	28.0	2,654	103	67.2
(in Tex. and La.)[1]....1925	10,355	15,460	25,815	7.4	17,569	1,308	556	23.5	480	30.0	2,798	113	68.1
Texas & Pacific.....1926	5,972	5,639	11,611	3.9	21,467	1,589	595	21.5	479	34.8	2,848	100	51.8
1925	6,303	6,837	13,140	6.6	18,669	1,512	605	23.2	471	31.8	3,167	109	55.3

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

General News Department

(*Continued from page 787*)

During the third session the Minnesota Stop Law will be discussed by F. W. Matson, commissioner of the Minnesota Railway and Warehouse Commission, and a response will be made by J. E. Long, superintendent of safety of the Delaware & Hudson. L. K. Sillcox, general superintendent of motive power of the Chicago, Milwaukee & St. Paul, will speak on "The Mechanical Department and Its Relation to Safety," while C. L. LaFountaine, general safety supervisor of the Great Northern, will respond. E. R. Lewis, principal assistant engineer of the Michigan Central, will present the subject "The Relation of the Engineering Department to Safety," and F. W. Mitchell, director of personnel of the New York, New Haven & Hartford, will respond.

The fourth session will be devoted to a one-hour safety agents' and inspectors' session, a round table discussion and the installation of officers.

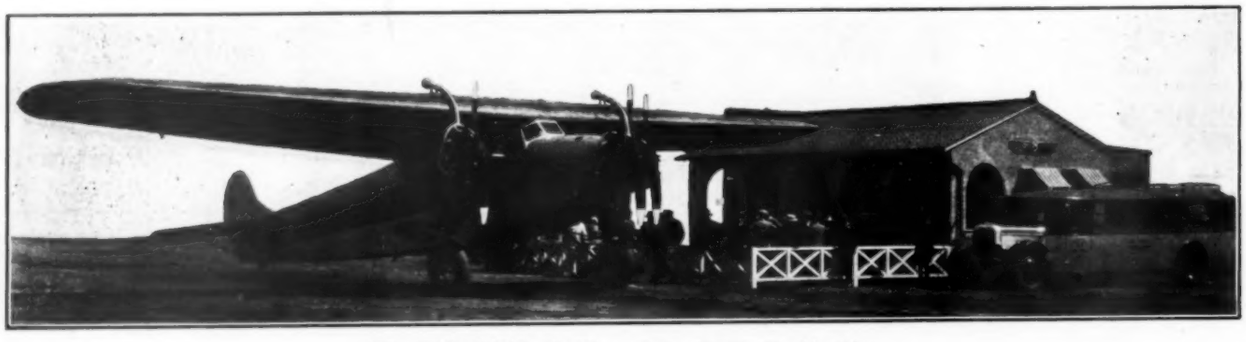
Philadelphia-Washington Passenger Air Line

The Philadelphia Rapid Transit Company, which has in service three aeroplanes, carrying passengers regularly every day between Philadelphia and Washington, announces that 2,100 passengers have been carried since the opening of the service, in July, and that applications for passage are more numerous than can be accommodated. Since the addition of the third plane to the original two, the service has been extended southward to Norfolk, Va.; while between Philadelphia and Washington three trips a day are made in each direction.

Commendatory letters have been received from scores of passengers, and 29 such letters are printed in a circular which has been issued. One passenger says that the roar of the motor was not so great as he had expected and he had no difficulty in talking to the other passengers. Another passenger says that a full glass of water standing on a table would have made the trip with him without spilling. The fare from Philadelphia to Washington, 125 miles is $15; round trip $25. The capacity of the airplanes is eight passengers each, and each person is allowed 30 lb. of baggage.

The illustration shows the waiting room at the starting point in Philadelphia, the Navy Yard Flying Field, with the Fokker plane. The bus shown in the illustration takes passengers to and from the center of the city.

It is planned to discontinue the air service at the close of the Sesqui-Centennial Exposition.



The Philadelphia Station of the P. R. T. Air Line

Accidents Cost Ten Millions a Month

The Safety Section of the American Railway Association, T. H. Carrow, chairman, in circular No. 137, calls attention again to the goal which the section has set for itself—a reduction, by 1930, of 35 per cent in accidents on American railroads as compared with 1924; and, says Mr. Carrow, this is feasible. He suggests that the record of injuries to employees on each division of every road be tabulated, for the last two months of 1925, so as to show the number chargeable to each yardmaster, shop, track, station or other foreman with the view of developing the high spots; "a great deal can be done during November and December to improve the record for 1926, and this will give a good start for 1927."

A table is presented showing that the total cost of accidents on American steam railways in 1925, was over 118 million dollars. As the statement apparently does not include the sums paid on freight claims for loss and damage due to wrecks, (collisions and derailments) which was $2,694,388, the total loss for the year may reasonably be stated as more than 120 millions of dollars. The table follows:

ACCIDENTS ON STEAM RAILWAYS AND COST

	Peak year (1916)	Last year (1925)
Accidental deaths	10,001	6,766
Accidental injuries	196 722	137,435
Injuries to persons	$29,485,700	$44,940,512
Clearing wrecks	$5.163,172	$8,361,223
Damage to cars and locomotives	$30 978.732	$50,167,338
Damage to way and structures	$9,293,620	$15,050,201
Total cost	$74,921,174	$118,519,274
Ratio of loss to total railway operating expenses, per cent	3.09	2.51

Decalogue of Safety

L. G. Bentley, chairman of the committee on education of the Safety Section of the American Railway Association, in circular No. 135, places before the railroads, in his general campaign for safety "all the year—every year," the safety program of the Section for the month of November. This program specializes on three subjects: (1) casualties to passengers, (2) casualties to trespassers, and (3) value of competent first aid. The difference in importance of different classes of causes of accident is illustrated in this circular by outline sketches of men of different sizes. The figure which illustrates the number of "adult citizens of community value" killed and injured while trespassing is about three times as large as the man representing the total of those trespassing victims who are classed as tramps.

The importance of first-aid is set forth in a dialogue, illustrated, concerning two men who suffered slight injuries, one of whom neglected the matter and had to have his arm amputated, while the other went promptly to the first-aid specialist and lost no time from his duty.

The poster accompanying this circular sets forth a "decalogue of safety," as follows:

1. **Don't** board passenger trains unless you are a passenger.
2. **Don't** attempt to get on or off a moving passenger train.
3. **Don't** be careless in stepping on or off a standing passenger train.
4. **Don't** stand on platforms or in open doors of passenger cars.
5. **Don't** place hand or arm under an open window.
6. **Don't** attempt to get on or off or crawl under a freight train under any circumstances.
7. **Don't** cross railroad tracks without looking in both directions. If view is obstructed, stop, look and listen.
8. **Don't** attempt to cross tracks in front of an approaching train.
9. **Don't** walk or stand on railroad tracks.
10. **Don't** allow your children to play around railroad tracks or trains.

This is a **personal matter** to you and the welfare of your family.

Traffic News

The New England Shippers' Advisory Board will hold its fourth regular meeting at the Biltmore Hotel, Providence, R. I., on Thursday, October 28.

Following the discontinuance of the consolidated ticket office at Louisville, Ky., the Chicago, Indianapolis & Louisville has opened a city ticket office in Room 108 Starks building.

The traffic bureau of the Tacoma Chamber of Commerce has requested that the 70-hour schedule of limited trains between Chicago and Tacoma, Wash., be reduced to 60 hours, in order to encourage travel into northwestern territory.

The Pennsylvania at the end of this month will discontinue the ferry between Coopers Point, Camden, N. J., and Shackamaxon street, Philadelphia, the opening of the Delaware River Bridge having made the ferry traffic unprofitable.

The Motor City Traffic Club of Detroit, Mich., held its first monthly dinner meeting on October 18, at the Hotel Savoy. W. C. Cowling, of the Ford Motor Company, was the principal speaker. Copies of the first issue of the club's monthly publication, the "Motor Meter," were distributed.

The Pennsylvania is to discontinue all passenger train service (one train each way) on the line between Mount Holly, N. J., and Medford, six miles; authority for this action having been granted by the Public Utility Commissioners on a showing that the receipts have dwindled to an average of $1.25 a day.

The next meeting of the Northwest Shippers' Advisory Board will be held at the St. Francis hotel, St. Paul, Minn., on October 26. Besides the reports of standing committees, special reports will be made on the grain situation at Buffalo, N. Y., and on the activities of the Freight Station Section and the Freight Claim Prevention Section of the American Railway Association. Other subjects to be considered will include the furnishing of grain doors or lumber for bulkheading grain; the handling of livestock through the Twin City terminals and the furnishing of cabooses or coaches for attendants to ride in; and the experience in a transportation way of the use of combined harvesting and threshing machines this year.

Freight Traffic for August and Eight Months

Freight traffic for the first eight months this year, according to reports compiled by the Bureau of Railway Economics, totaled 312,528,590,000 net ton-miles, exceeding by 8,187,686,000, or 2.7 per cent, the best previous record (eight months in 1923). Compared with the corresponding period last year this was an increase of seven per cent; and it was 13.9 per cent over 1924.

In the Eastern district the total for the eight months showed an increase of 7.6 per cent over 1925. The Southern district showed an increase of 8.9 per cent, and the Western 5.4 per cent.

The volume of freight handled in August also was the greatest for any August on record, amounting to 43,723,917,000 net ton-miles. This was eight-tenths of one per cent below the highest record for any one month (October last year). August this year exceeded by 1,039,009,000 net ton-miles or 2.4 per cent the best previous August, which was in 1920, while it also exceeded by 2,014,568,000 net ton-miles or 4.8 per cent the figure for August, 1925.

In the Eastern district, August showed an increase of 4.5 per cent, the Southern 1.7 per cent, and the Western 6.4 per cent.

The daily average movement of freight cars in August was 31.5 miles, the highest for any August on record and only 0.7 mile under the best record for any month (October last year, 32.2 miles). It was 1.9 miles above August last year, and 4.9 miles over August, 1924.

The average load per car in August was 27.9 tons, an increase of one-tenth of a ton over that of August last year and 0.8 ton over that of August, 1924. Compared with August, 1923, it was a decrease of 0.6 ton.

Foreign Railway News

Scandinavian Railways to Use 24-Hour Clock System

Scandinavian railways will adopt the 24-hour clock system, beginning May 15, 1927. The Swedish, Norwegian, and Danish railways will adopt the system on that date.

Electrification of Brazilian Railway Proposed

The Ministry of Transportation of Brazil is reported to be considering the electrification of the Central do Brazil, work to begin before the end of 1926. The work of electrification will be commenced in the suburban district of Rio de Janeiro, and will be carried out for a distance of about 40 miles. The electrification will be financed by the national treasury. When the project was first considered in 1922, bids were offered by two American firms, and by two British construction companies, but were rejected by the government.

Violent Storms Cripple Railroads in Chile

Serious damage was caused during the late part of September, 1926, to railroads and telegraphic communications in Chile by snowstorms of unprecedented severity, according to the Railway Gazette. The Transandine route and the Longitudinal of Chile suffered complete interruption of service in the Andean region, and the line between Valparaiso and Santiago de Chile operated under great difficulty. The latest reports from Las Cuevas, at the time of the storms, stated that the work of clearing the Argentine end of the Transandine was totally interrupted.

Three New Railways in the Punjab, India

Three new railways will be constructed immediately in the Punjab, India, following approval of construction by the Indian railway board. The railways will all be broad gage (5 ft. 6 in.). The first of the three roads will be built from a connection at Lyallpur, on the present main line from Karachi toward Jammu in Kashmir, to Jaranwala, on the Karachi-Lahore line, a distance of 21¼ miles. A second line, to be known as the Rohtak-Gohana-Fanipat is to be built. It will be 45 miles in length. The third line will be 26 miles in length.

German Railways Show Financial Improvement

Great improvement in the financial situation of the German Railroad Company is reported to be taking place. For the first half of 1926, revenue approximated 2,005 million marks, while expenses totaled 2,105 million marks. In July, however, the railroads showed the first monthly surplus for the year which amounted to 10 million marks. August and September are expected to yield larger surpluses than that of July. The corporation is bearing up well under the burden of an increase since 1925, of 277 million marks annually in the wage scale, and a yearly increase in pensions of 270 million marks more than in 1913.

Indian Railway Statistics for 1925-26

A preliminary abstract of statistics for the year 1925-26, released by the Indian railway board, shows the gross revenue receipts of the state owned railways of India (which comprise nearly three-quarters of the total mileage of all the Indian railways) to be 99¾ crores of rupees ($189,280,000), and the net revenue to be 35½ crores of rupees ($85,200,000). The number of passengers carried on all railways was 599,000,000, which represents an increase of 23,000,000 passengers over the year 1924-25. Passenger earnings increased by ten lakhs of rupees ($240,000). Freight tonnage also increased during the year, 79,517,000 tons of freight being carried, or an increase of nearly 2,000,000 tons over 1924-25. Freight revenue, however, dropped by about 2 crores of rupees ($4,800,000), in spite of the increased tonnage of freight hauled during the year. The decrease in revenue is laid to the fact that the average distance that consignments were carried, fell from 273 miles to 250 miles.

Equipment and Supplies

Locomotives

THE CANADIAN NATIONAL has ordered one rotary snow plow from the American Locomotive Company, Montreal Works.

THE A. E. STALEY MANUFACTURING COMPANY has ordered one eight-wheel switching locomotive from the Baldwin Locomotive Works.

THE NORTHERN RED LUMBER COMPANY, Korbel, Cal., has ordered one Mikado type locomotive from the Baldwin Locomotive Works.

THE SOUTH AFRICAN RAILWAYS are inquiring through the builders for 10, 2-6-2 + 2-6-4 and 50, 4-6-2 + 2-6-4 Garratt type locomotives.

THE LOUISVILLE & NASHVILLE has ordered 18 Mikado type locomotives from the American Locomotive Company. These locomotives will have 27-in. by 32-in. cylinders and a total weight in working order of 323,000 lb. Inquiry for this equipment was reported in the *Railway Age* of October 9.

Freight Cars

THE GULF REFINING COMPANY is inquiring for eight high side gondola cars.

THE STANDARD OIL COMPANY OF NEW JERSEY is inquiring for 25 box cars of 50 tons' capacity.

THE SOUTHERN PACIFIC is inquiring for fabricated steel parts for 500 box cars to be built in its own shops.

THE MANILA RAILROAD has ordered 50 flat cars from the Koppel Industrial Car & Equipment Company.

THE ANDES COPPER MINING COMPANY has ordered 34 ore cars of 40 tons' capacity from the Magor Car Corporation.

THE CHESWICK & HARMER has ordered 10 steel hopper cars of 50 tons' capacity from the Pressed Steel Car Company.

THE CHICAGO, MILWAUKEE & ST. PAUL is expected to place orders this week for from 1,000 to 2,000 cars. Inquiry for this equipment was reported in the *Railway Age* of October 2.

THE LOUISVILLE & NASHVILLE has ordered 1,000 gondola cars from the Pressed Steel Car Company and 200 automobile cars and 200 flat cars from the Tennessee Coal, Iron & Railroad Company. Inquiry for this equipment was reported in the *Railway Age* of October 9.

Passenger Cars

THE LOUISVILLE & NASHVILLE has ordered six standard 70-ft. coaches, 10 70-ft. coaches with a middle smoking compartment, six 70-ft. coaches with an end smoking compartment, two 70-ft. combination passenger and baggage cars, two 60-ft. mail cars and two 80-ft. dining car shells from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of October 9.

Iron and Steel

THE PENNSYLVANIA is inquiring for 200 tons of bridge steel.

THE MISSOURI PACIFIC is inquiring for 30,000 tons of rails and a quantity of tie plates.

THE WABASH has ordered 7,500 tons of rails from the Inland Steel Company, 7,500 from the Illinois Steel Company, and 3,000 from the Bethlehem Steel Company.

Machinery and Tools

THE RUTLAND has ordered a 36-in. by 18-ft. lathe from the Niles-Bement-Pond Company.

THE UNION PACIFIC has ordered a Monarch lathe from Manning, Maxwell & Moore, Inc.

THE ILLINOIS CENTRAL has ordered a National bolt rivet header from Manning, Maxwell & Moore, Inc.

THE NORTHERN PACIFIC has ordered a Bridgeport grinding machine from Manning, Maxwell & Moore, Inc.

THE READING COMPANY has ordered one frame jaw miller for use at Reading, Pa., from the Micro Machine Company.

THE LEHIGH VALLEY has ordered a Chambersburg mounting and demounting wheel press from Manning, Maxwell & Moore, Inc.

THE ATCHISON, TOPEKA & SANTA FE has ordered one grinder from the Micro Machine Company for use at San Bernardino, Cal.

THE LOUISVILLE & NASHVILLE has ordered one 15-ton electric crane with a 73-ft. 6-in. span, for use at Cincinnati, Ohio, from the Shaw Electric Crane Works.

THE CANADIAN NATIONAL has ordered one grinder for use at Moncton, N. B., and one frame jaw miller for use at Stratford, Ontario, from the Micro Machine Company.

THE NEW YORK CENTRAL has ordered two 16-in. by 5-ft. centers, geared head lathes, also an 18-in. by 3-in. wheel double grinder from the Niles-Bement-Pond Company. The New York Central has ordered two Thompson universal grinding machines from Manning, Maxwell & Moore, Inc.

Signaling

THE UNION PACIFIC has ordered from the Union Switch & Signal Company an electric interlocking, type F, 14 working levers, for Bonner Springs, Kan.

THE ALABAMA GREAT SOUTHERN has contracted with the General Railway Signal Company for the installation of an electric interlocking at Wauhatchie, Tenn.; 38 working levers.

THE PENNSYLVANIA has contracted with the Union Switch & Signal Company for the installation of interlocking at Greenup, Ill.; eight mechanical levers and 15 electric. Position-light signals will be used.

THE AMERICAN LOCOMOTIVE COMPANY has ordered from the General Railway Signal Company 10 sets of G. R. S. locomotive equipments for automatic train control on locomotives of the Michigan Central; and five sets for locomotives to go to the Boston & Albany.

THE DELAWARE, LACKAWANNA & WESTERN has contracted with the Union Switch & Signal Company for the necessary apparatus to install automatic train control on the Scranton division, 270 miles of track. This, with the installation made under the first I. C. C. order, will make a total of 552 miles of track under automatic train control. The final total number of locomotives to be equipped will be 210. A new roadside pole-line for wires is to be built. With the completion of this work, this company will have expended about $1,500,000 on automatic train control.

THE LONG ISLAND has contracted with the Union Switch & Signal Company for the installation of automatic block signals on its Bay Ridge division, 9.5 miles, four track. This is a freight line and the signaling extends from FN Tower, the junction with the New York Connecting, southward to Bay Ridge, N. Y. This is an electric line and the propulsion current is 25 cycles; the signal current will be 60 cycles. Color-light signals will be used and the contract includes also two electro-pneumatic interlockings, 23 levers each; also a mechanical interlocking, 24 levers and an electro-mechanical interlocking.

Supply Trade News

The Pyle National Company, Chicago, will construct a one-story plant, 22 ft. by 61 ft.

R. V. Lucas has been appointed water service engineer of the **Aluminate Sales Corporation,** with headquarters at Chicago.

J. R. Brandt has joined the Cleveland, Ohio, office of the **Bridgeport Brass Company** as raw material salesman in the Pittsburgh territory and parts of Ohio.

J. H. Bunnell & Co., Inc., has removed its factory from New York to Pearl and Prospect streets, Brooklyn, N. Y. The main office and warehouse will continue at 32 Park place, New York City.

The headquarters of **J. R. Sexton,** manager of the railroad department of the **H. H. Robertson Company,** has been transferred from Chicago to the general offices of the company at Pittsburgh, Pa.

The Air Reduction Company, Inc., New York, has acquired all the assets of the **Dayton Oxygen & Hydrogen Products Company,** Dayton, O., adding another plant to the chain of 52 plants and 169 warehouses that the Airco maintains throughout the United States.

J. C. Morrell, formerly in the automotive division of the **Westinghouse Air Brake Company** and later assistant to district engineer of the same company and the **Westinghouse Traction Brake Company,** has been appointed representative of both companies, with office at New York.

Robert J. Anderson, Inc., has been organized to operate as a commercial testing laboratory, specializing in metals and alloys. A new laboratory at 2416 Beekman street, Cincinnati, O. is fully equipped for chemical analysis, mechanical testing, metallography, heat treatment and radiography. **Dr. Robert J. Anderson,** metallurgical engineer and expert on aluminum, is in charge of the laboratory. The officers of the company are **Dr. Robert J. Anderson,** president; **H. J. Hater,** treasurer, and **R. T. Mesker,** secretary. These with **John Eckerle** and **E. F. Eckerle** form the incorporators and directors.

R. H. Cross, branch manager of the Seattle Branch of the **Timken Roller Bearing Service & Sales Company,** has been promoted to assistant to the district manager of sales of the industrial division, with headquarters at Seattle, Wash., and will be succeeded by **Yale D. Hills,** representative, with headquarters at Canton, Ohio. **E. N. Beisheum,** formerly representative of the Bock Bearing Company, with headquarters at Toledo, Ohio, has been appointed assistant to the general manager of the Timken Company, with headquarters at Canton. **S. C. Partridge** has been placed in charge of the Buffalo office of the industrial division, to succeed **Lee Warrender,** who has resigned to engage in other business.

Union Switch & Signal Company Acquires Right to Use Miller Train Control

A joint agreement has been entered into between the General Railway Signal Company, the Union Switch & Signal Company and the Miller Train Control Corporation whereby the two signal companies acquire the right to manufacture and sell the Miller train control systems and train-stop devices in the United States, east of the Rocky mountains, and also in the Dominion of Canada.

The General company had previously obtained a license from the Miller company, as announced in the *Railway Age* of June 14, 1926. At that time it was stated that the Miller organization would remain intact and had reserved the Chicago & Eastern Illinois, the Elgin, Joliet & Eastern and the Toledo-Detroit division of the New York Central; and the new agreement provides for the same conditions. It is understood that the Miller engineers will co-operate with the engineering departments of both signal companies. Since the agreement was first made with the General company, the Miller engineers have been working with the engineering department of that company in designing and perfecting plans for effecting interchangeability and standardization, and this work is now well in hand.

Obituary

J. P. Carney, sales service engineer of the Grip Nut Company, Chicago, died on October 16 at Fond du Lac, Wis.

James H. McNulty, president of Pratt & Lambert, Inc., Buffalo, N. Y., died on October 17 from injuries received in an automobile accident on the day previous, near Buffalo. Mr. McNulty was a banker, took an active interest in civic affairs and was well known in the paint and varnish industry, having served as president of the National Varnish Manufacturers Association in 1914. He first entered the service of Pratt & Lambert, Inc., in 1892 and was steadily promoted until he became president of the company in 1917.

Frederick M. Nellis, special representative at New York of the Westinghouse Air Brake Company and secretary since 1899 of the Air Brake Association, died suddenly in his office on October 16. Mr. Nellis was born on February, 27, 1862, at Tionesta, Pa. At the age of 16 he learned the machinist's trade at Dennison, O., and after serving an apprenticeship as locomotive fireman became a locomotive engineman on the Panhandle division of the Pennsylvania Railroad. He was throughout the remainder of his life a member of the Brotherhood of Locomotive Engineers. He entered the service of the Westinghouse Air Brake Company in 1882 as a demonstrator on its instruction car. At the age of 34 Mr. Nellis entered Cornell University, taking a special course in mechanical engineering and remained at Cornell for three years, graduating with the class of 1899. He then resumed his association with the Westinghouse Air Brake Company, serving in various responsible positions. About 1911 he was representative of the New England district at Boston, Mass., and since 1915 he has been a special representative of the company at New York. Mr. Nellis was one of the early members and leaders of the Air Brake Association and his services contributed largely to the association's success. He became secretary of the association in 1899 and in 1924 as a compliment to his work the association made him secretary for life. Mr. Nellis was for a number of years on the editorial staff of Locomotive Engineering and contributed many articles on air brake practice and locomotive and train operation.

F. M. Nellis

Trade Publications

CLEAN AND DRY STEAM.—Standard specifications for clean and dry steam are contained in Bulletin No. 39, issued by the Andrews-Bradshaw Company, 530 Fourth avenue, Pittsburgh, Pa. These specifications are for the guidance of the user or prospective purchaser of steam, steam-making or steam-using equipment.

STEEL SHUTTERS AND DOORS.—Details of construction, with full dimensions and specifications, of steel rolling shutters and doors are given in the 32-page catalogue issued by the Cornell Iron Works, 71 Marion street, Long Island City, N. Y. Illustrations show these shutters and doors in actual use in factories, warehouses, stores, etc.

Railway Construction

ALTON, QUINCY & NORTHERN.—A certificate of convenience and necessity has been granted by the Illinois Commerce Commission for the construction of a railroad from Alton, Ill., north through Madison, Jersey, Calhoun, Pike and Adams counties to Quincy, Ill., about 100 miles.

ATLANTIC COAST LINE.—Bids will be received until October 25, for the construction of a six-stall engine shed at Chatmar, Fla.

CANADIAN NATIONAL.—Plans have been prepared for the construction of a two-story brick passenger station at Armstrong, Ont., having outside dimensions of 78 ft. by 30 ft. A highway subway is contemplated in Edmonton, Alta., at 109th street to be constructed jointly with the city at a cost of about $205,000. A contract has been awarded to Johnson & Co., Kamloops, B. C., for the construction of a two-story brick passenger station at Kamloops 120 ft. by 33 ft.

CANADIAN PACIFIC.—A contract has been let to Colton Company, Ltd., Vancouver, B. C., for the construction of a gravel fill and riprap toe wall along the right-of-way bordering on Burrard inlet from Cambridge to Renfrew streets, Vancouver, a distance of about one mile, to carry an extension to a main switching lead and a 2,700-ft. extension to a storage track. The project is estimated to cost $40,000.

CHESAPEAKE & HOCKING.—The Interstate Commerce Commission has issued a certificate authorizing this company, a subsidiary of the Chesapeake & Ohio, to build a new line from a connection with the C. & O., at or near Gregg, Ohio, to a connection with the Hocking Valley at Valley Crossing, Ohio, about 63 miles, at a cost estimated at $12,371,188. The C. & O., now operates between the two points via the Norfolk & Western under a trackage agreement which the latter has proposed to terminate on September 16, 1927. Application for authority to build the line was filed by the New York, Chicago & St. Louis and was considered by the commission in connection with the proposed Van Sweringen merger. In dismissing the merger application the commission said that the proposed line was to be an essential part of the C. & O., and dismissed the construction application without prejudice to its resubmission by the C. & O. The Nickel Plate later renewed its application but later the C. & O. caused the Chesapeake & Hocking to be organized and it filed an intervening petition adopting and concurring in all the statements made in the application filed by the Chesapeake & Hocking. More than 63 per cent of the revenue coal tonnage of the C. & O. moves to its western connections via Cincinnati and Columbus and the application represents that provision must be made to handle 25,000,000 tons a year through Columbus in the next five years. The line will be double track and laid with 100-pound rail. It will have 3 deg. maximum curves with about 20 per cent of curvature per mile. The maximum grades will be 0.2 per cent northbound and 0.5 per cent southbound. The company expects to begin construction work immediately and to complete it in about a year.

CHICAGO & ALTON.—Company forces have begun the construction of a highway subway at Cicero avenue, Chicago, estimated to cost $195,000.

CHICAGO, MILWAUKEE & ST. PAUL.—Construction of an addition to the powerhouse at Miles City, Mont., has been deferred until early in 1927.

CHICAGO & NORTH WESTERN.—A contract has been let to S. G. Cool, Chicago, for the construction of a three-stall addition to the roundhouse at Benld, Ill.

CHICAGO, NORTH SHORE & MILWAUKEE.—This company contemplates the construction of a passenger coach repair shop at Waukegan, Ill.

CHICAGO, ROCK ISLAND & PACIFIC.—Bids were received until October 19, for track elevation near Ninety-fifth street at Jeffery and Paxton avenues, Chicago. Construction of this project is estimated to involve an expenditure of $200,000.

DELAWARE, LACKAWANNA & WESTERN.—This company and its subsidiary, the Morris & Essex, have been authorized by the Interstate Commerce Commission to construct 0.68 miles of 4-track line in Jersey City, N. J., in connection with a new freight terminal to be built there. It is planned to utilize motor trucks in the under-Hudson vehicular tunnels now under construction for freight service to and from New York, which necessitates an increase in facilities at Jersey City. The new terminal will be a two-level structure constructed to permit later the addition of several stories for warehouse purposes above it. The new track to be built for connection with the terminal will be above the street level, necessitating several steel bridges. The estimated cost of the entire project, of which 50 per cent will be constructed in the initial stage, is placed at $12,938,000.

ERIE.—A contract has been awarded to the Howard A. Rogers Construction Company, Chicago, for the construction of an overhead bridge to carry Sax street over the company's line at Moosic, Pa.

FERNWOOD, COLUMBIA & GULF.—A contract has been awarded to W. W. Easily, Magnolia, Miss., for the construction of a one-story brick station at Tylertown, Miss., at a cost of $15,000.

FLORIDA EAST COAST.—This company has awarded a contract to the W. P. Thurston Company, St. Augustine, Fla., for the construction of a steel, hollow tile and brick freight house at Hopkins, Fla., at an estimated cost of $35,000; and contracts to the Hall Construction Company, Bainbridge, Ga., and F. X. Bradley & Co., St. Augustine, Fla., for grading at Hopkins, Fla., to cost $25,000.

ILLINOIS CENTRAL.—A contract has been let to the Roberts & Schaefer Company, Chicago, for the construction of a 200-ton coaling station at Denison, Iowa. Plans have been prepared for the construction of a one-story brick automobile warehouse 36 ft. by 135 ft. to be operated in connection with the freight facilities at Birmingham, Ala. Bids are being received until October 25 for the construction of a powerhouse at Paducah, Ky., estimated to cost $300,000.

JACKSON & EASTERN.—A contract has been awarded to O. A. Hanna, Jackson, Miss., for the construction of foundations for a 190-ft. steel bridge across the Pearl river, east of Jackson, the steel erection to be done by company forces. A contract for 21 miles of grading on the 40-mile extension of the line from Lena, Miss., to Jackson, has been let to the S. K. Jones Construction Company, Memphis, Tenn., while grading on the remaining 19 miles has been let to the Dyess Construction Company, Jackson.

KANSAS CITY SOUTHERN.—A contract has been awarded to the Goodlander Construction Company, Kansas City, Mo., for the construction of a one-story brick and concrete station at Gentry, Ark., estimated to cost $22,000.

LOUISVILLE & NASHVILLE.—A contract has been awarded to Reinhardt & Dennis and to the W. J. Sparks Quarry Company for the construction of a new line near Sinks, Ky., which involves the driving of several tunnels.

MISSOURI PACIFIC.—Bids closed October 21, for the construction of a crane runway at the reclamation plant at North Little Rock, Ark., at an estimated cost of $10,000.

NEW YORK CENTRAL.—The general contract for the construction of a reinforced concrete, brick and steel station at South Bend, Ind., has been let to the H. G. Christman Company, South Bend.

OREGON SHORT LINE.—Plans are being prepared for the installation of a water treating plant at Glenns Ferry, Idaho, at an estimated cost of $41,000, including a concrete treating tank with wood roof, a frame chemical mixing and storage house, 24 ft. by 40 ft., and necessary mixing tanks, machinery and pipe lines. Company forces will construct a 3,000 ft. spur near Nampa, Idaho. A contract for a tank 35 ft. in diameter and 60 ft. high on concrete and pile foundations for a water treating plant at Salt Lake City, Utah, has been let to the Graver Corporation, Chicago. This project, which involves an expenditure of about $32,000, includes a frame chemical mixing and storage house, 20 ft. by 33 ft.

PENNSYLVANIA.—Contracts have been awarded to the Ketler-Elliot Company, Chicago, for the construction of a superstructure for 12th street bridge, Erie, Pa., and to the Arundel Corporation, Baltimore, Md., for dredging a new channel and construction of a stone jetty at Little Creek, Norfolk, Va. The estimated cost of the later construction is $325,000.

RICHMOND, FREDERICKSBURG & POTOMAC.—A contract has been awarded to the Baker-Royer Company, Richmond, Va., for the construction of a steel and concrete undergrade structure to eliminate a grade crossing on the Richmond-Washington highway, north of Occoquan, Va. The estimated cost of construction is $47,000.

SEWELL VALLEY.—This company has applied to the Interstate Commerce Commission for authority to build a branch line from a point near Rupert to a point near Duo, W. Va., 12 miles.

SOUTHERN PACIFIC OF MEXICO.—This company contemplates the construction of a combination passenger station, custom house and immigration office at Nogales, Sonora, to cost about $160,000. Included in this improvement are the addition of two passenger yard tracks and three team tracks.

SOUTHERN PACIFIC.—This company contemplates the construction, after January 1, 1927, of a 307-ft. by 50-ft. reinforced concrete freight house at Bakersfield, Cal., with an open platform 80 ft. long. Adjacent to the freight-house it is planned to construct, of concrete, an open automobile unloading platform, 235 ft. by 60 ft. arranged for both side and end door unloading from cars. Plans have also been prepared for the construction of a freight yard at Fresno, Cal., involving the building of an icing plant by the Pacific Fruit Express Company. About 26 miles of trackage will be necessary, including four icing tracks of 75 car length.

SOUTHERN PACIFIC.—A contract for the construction of buildings for the new freight terminal at Dallas, Tex., estimated to cost $1,500,000, when completed, has been let to the Bellows-MacClay Construction Company, Dallas.

UNION PACIFIC.—The Interstate Commerce Commission has authorized the construction by this company of a branch line in Larimer County, Colo., from a connection with one of its branch lines at Ripple, Colo., in a general easterly direction for a distance of 2.5 miles. The estimated cost of the work is $108,361, construction to start immediately.

UNION PACIFIC.—A contract has been awarded to Peterson, Shirley & Gunther, Omaha, Neb., for the construction of the foundation, piers, abutments, decking and handrail in connection with the rebuilding of the "L" street viaduct at Omaha. Steel for the viaduct, which is made up of one 96-ft. deck plate girder span and two 134-ft. truss spans with 343 lineal ft. of approach, will be erected by company forces. The rebuilding is expected to cost $94,500. The water station at Columbus, Neb., will be improved by sinking two 110-ft. wells to be operated by motor-driven turbine pumps and by installing a 350,000-gal. steel water tank and a 42,000-gal. water softener at a total cost of $75,500. The improvement will be constructed by company forces with the contract for steel for the tank awarded to the Graver Corporation, Chicago, and for the softener to the Chicago Bridge & Iron Company, Chicago. Company forces will construct 12,400 ft. of additional yard tracks, relocate 22,000 ft. of existing yard tracks, install a 12-in. standpipe and enlarge the yard office at North Platte, Neb., at an estimated cost of $100,600. A contract has been awarded to the Missouri Valley Bridge & Iron Works, Leavenworth, Kan., for the construction of foundations, piers and abutments in connection with the double tracking of the bridge over the Delaware river near Perry, Kan., at a cost of $189,100. Company forces will be employed in the steel erection. A contract has been awarded to Peterson, Shirley & Gunther, Omaha, Neb., for the grading and culvert work in the construction of an industrial spur 2.4 miles long near Ripple, Colo. With the construction of 1.4 miles of side track the project is expected to involve an expenditure of $82,000.

WABASH.—A contract has been awarded to the Industrial Track Construction Company, St. Louis, Mo., for the construction of 21.6 miles of second main track from Lima Junction, Ohio, to Britton, Mich., involving an expenditure of approximately $1,400,000.

Railway Financial News

ALASKA ANTHRACITE.—*Foreclosure Sale.*—This company's property was purchased at a foreclosure sale held at Cordova, Alaska, on October 9, by A. J. Diamond, representing the bondholders. It is said that the railroad will be rehabilitated.

ALLEGHENY & WESTERN.—*Lease.*—This company has applied to the Interstate Commerce Commission for authority for a lease of the Allegheny Terminal Company to put into written form a verbal arrangement which has been in effect since January 1, 1900. The company owns all the capital stock of the terminal company and proposes to assign the lease to the Buffalo, Rochester & Pittsburgh.

BALTIMORE & OHIO.—*Control of Hamilton Belt.*—The Interstate Commerce Commission has authorized the acquisition of the Hamilton Belt by the Baltimore & Ohio under an operating contract. The proposed contract will not affect any change in the present methods of operation but is to avoid unnecessary expense incurred in separate accounting. The authority is retroactive as of January 1, 1926.

BUFFALO, BRADFORD & PITTSBURGH.—*Abandonment.*—This company which is leased by the Erie has been authorized by the Interstate Commerce Commission to abandon its so-called West Branch from a point 1.56 miles out of Bradford, Pa., to Nusbaum, 3.68 miles, which was built to serve sawmills, later abandoned.

DETROIT, TOLEDO & IRONTON.—*Excess Income.*—The Interstate Commerce Commission has announced a proceeding to determine whether this company has had an excess net railway operating income, subject to recapture, for the period from September 1 to December 31, 1920, and for the years 1921, 1922, 1923, 1924 and 1925. The case was assigned for hearing on January 3 at Washington before Examiner N. B. Haley.

GEORGIA & FLORIDA RAILROAD.—*Securities.*—This company, organized to take over the property of the Georgia & Florida Railway, now in receivership, and of the Statesboro Northern, has applied to the Interstate Commerce Commission for authority to issue $9,000,000 of 6 per cent preferred stock, 100,000 shares of common stock without par value, $5,000,000 of 6 per cent first mortgage gold bonds, and $1,500,000 of 6 per cent income bonds. The company also asks authority to assume liability for and to guarantee $750,000 of 5 per cent equipment trust certificates and a loan of $792,000 from the United States government to John Skelton Williams, receiver, to be secured by collateral deposit of $800,000 of the first mortgage bonds.

Reorganization Plan.—Under the plan of reorganization of the Georgia & Florida each holder of $10,000 of old first mortgage 5 per cent bonds carrying all overdue and unpaid coupons and interest thereon, upon exercising his privilege of subscribing to $2,500 of 6 per cent income bonds at par, will under the plan receive securities of the reorganized company as follows: $2,500 new income 6 per cent debenture bonds, $14,000 of new 6 per cent preferred stock and 120 shares of new no-par value common stock.

A holder of $10,000 old 5 per cent first mortgage bonds, carrying all overdue and unpaid coupons, who declines to subscribe to the extent of 25 per cent of his holdings to the new income bonds will receive $10,000 (100 shares) in new 6 per cent preferred stock. Dividends on the preferred stock are to be cumulative three years after completion of the Greenwood extension.

Holders of the old second mortgage 6 per cent bonds will be given the opportunity of paying an assessment of 2½ per cent, or $25 for each $1,000 bond, for which they will receive scrip for one-quarter share of new preferred stock and 5 shares of new common.

LENOX.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Redwine, Ky., to Rush Branch, 7.7 miles.

MARSHALL, ELYSIAN FIELDS & SOUTHEASTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Com-

mission for authority to abandon its line from Marshall, Tex., to Elysian Fields, 18 miles.

MINARETS & WESTERN.—*Notes.*—The Interstate Commerce Commission has approved the issuance of $600,000 promissory notes (which will exceed 5 per cent of the company's outstanding securities) for the purpose of refunding two promissory notes of $350,000 and $250,000 maturing April 4, 1924, and August 30, 1924, respectively, which were not paid at maturity. The new notes which are to be in the same amount as the former notes are to be dated August 30, 1926; are to be payable to the Southern Pacific Company with a provision that if interest is not paid as it becomes due, it is to be added to the principal and become a part thereof and bear interest at the same rate.

OKLAHOMA & ARKANSAS.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line extending from Salina, Oklahoma, east about 20 miles.

PORTLAND & RUMFORD FALLS.—*Bonds Authorized.*—The Portland & Rumford Falls Railway which is leased by the Portland & Rumford Falls Railroad, which in turn is leased to the Maine Central, has been authorized to issue $881,000 5 per cent first mortgage sinking fund bonds for the purpose of refunding maturing securities. The bonds are to be sold to Maynard S. Bird & Co. and associates, of Portland, Me., at a price of 99.56 which was the best price received of ten offers from bankers in New York City, Boston, Mass., and Portland.

TIONESTA VALLEY.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control by lease of the Clarion River Railway, operating from Hallton to Croyland, Pa., 12 miles. Both companies are controlled by the Central Leather Company and it is proposed to combine them for operation.

SOUTHERN.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing the Southern to abandon that portion of its former main line between White Oak, Pittsylvania County, Va., and Lima, approximately 5 miles. The company desired to abandon this section of the old main line between White Oak and Danville, 8.37 miles, but the commission denied the application insofar as it dealt with that portion of the line between Lima and Danville. This line was formerly a section of the main line of the Southern but was not included in the present double-track main line which at this point uses a new cut-off which has been in operation since May, 1916. The carrier is given the right to renew the application after a period of one year if it appears that the traffic and revenues on that portion of the line between Lima and Danville do not justify its continued operation.

SOUTHERN.—*Stock Issue.*—This company has applied to the Interstate Commerce Commission for authority to issue $10,000,000 of additional stock at par to the holders of common and preferred stock of record at the close of business on November 24 in the proportion of one share of new stock for eighteen shares of stock held. The application states that the company now requires additional capital for additions and betterments and other corporate purposes and that it proposes to provide part of the funds needed through the issue and sale of stock instead of by issuing additional bonds.

Increased Prosperity.—President Fairfax Harrison has notified stockholders of the meeting to be held at Richmond, Va., on November 18, for the purpose of acting upon the proposal previously announced to make provision from time to time in the future for not exceeding $30,000,000 of new common stock and for the purpose, further, of specifically approving the immediate offer of $10,000,000 of this stock to preferred and common stockholders of record on November 24, 1926. The new stock will be offered for subscription at the rate of one new share for each 18 shares held with the privilege of paying either all cash on or before December 8, 1926, or 20 per cent on or before that date, 40 per cent on or before August 1, 1927, and 40 per cent on or before November 1, 1927. If authorized, the subscription warrants will be mailed on or about November 29, 1926.

President Harrison, in this notice to the stockholders, gives the following details concerning the Southern's present operating and financial position:

> The time has arrived, in the judgment of the board of directors, when the company's credit, its financial strength, and its sustained earning power warrant the inauguration of a policy of securing a portion of the new capital it shall require through the sale of stock. It seems no longer necessary to depend for this purpose solely upon the sale of bonds which add to the fixed charges. The company is now conservatively paying a 7 per cent dividend on the common stock, and that stock for some time past has been, and now is, selling in the market at a substantial premium, tending to reflect the growth in earnings; therefore, it seems to the board to be now the appropriate medium for new financing, especially as the participation of new partnership capital may be expected substantially to improve the company's financial structure.
>
> The steady expansion of productive activities in the South during the past 20 years is a matter of common knowledge. The effect of this sound growth on the business of Southern is shown by the fact that in the 20 years from 1905 to 1925 freight traffic increased 145 per cent, and passenger traffic 65 per cent. The traffic of 1925 would have imposed upon the facilities of 1905 a task impossible of performance. To keep pace with the growth of its traffic the company has carried out a continuous program of additions and improvements to its plant, such as the following:
>
> Construction of second main track on the heavy traffic lines;
> Reduction of main line grades and curvature;
> Installation of automatic electric block signals and improved train dispatching facilities;
> Construction of long passing tracks;
> Building of new shops and yards, and other terminal facilities;
> Laying of heavier rail;
> Construction of stronger bridges;
> Acquisition of more powerful locomotives and larger cars.
>
> Such improvements make possible a steadily increasing traffic movement, at a lower cost per unit, with consequent increase in net earnings.
>
> The capital investment in road and equipment on December 31, 1925, shows a net increase of $113,890,000 over the investment on June 30, 1915. Notwithstanding this large increase in capital investment, the net increase in total bonds and notes outstanding during the same period was only $50,060,000. The balance of over $63,000,000 invested in the property came from cash ploughed back out of earnings. No additional capital stock has been issued since 1899.
>
> The policy of upbuilding thus carried on has been amply justified in its financial consequences. The gross earnings in 1925 amounted to $149,313,891, compared with $75,554,651 in 1916. The net income remaining after the payment of interest charges in 1925 amounted to $22,579,172, compared with $11,524,195 in 1916—an increase of nearly 100 per cent in both gross and net. During the same period the earnings per share of common stock have risen from $7.10 to $16.31. For the year 1923 earnings amounted to $10.12 per share of common stock—for 1924, $12.30 per share—and for 1925, $16.31 per share. The operating income for the first eight months of 1926 was 7.21 per cent in excess of such income for the corresponding period of 1925. In considering the earnings here stated it may well be borne in mind that the Southern's income accounts do not and cannot reflect its interest, as a stockholder, in the undistributed earnings of several prosperous railroad companies now, and for many years past, managed in co-operation with the Southern, under the working designation "Southern Railway System," which companies have likewise benefitted from the growth of the South and have pursued a common policy of building up their properties out of earnings.

STOCKTON TERMINAL & EASTERN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire and operate the line from Stockton, Fla., to Bellota, 21.2 miles, which has been operated by a committee of bondholders.

Dividends Declared

International Railways of Central America.—Preferred, 1¼ per cent, quarterly, payable November 15 to holders of record October 29.

Average Price of Stocks and Bonds

	Oct. 19	Last Week	Last Year
Average price of 20 representative railway stocks	97.68	98.74	88.92
Average price of 20 representative railway bonds	95.99	95.60	91.58

Savings Banks Ask Change in Legal Requirements

The committee on railroad securities of the National Association of Mutual Savings Banks in its report presented at the seventh annual convention of the latter association at Philadelphia this week asks a change in the legal requirements for investments for savings banks. The report said:

> "We recommend the repeal or amendment of the statutes of several states requiring as a pre-requisite to the legality of railroad bonds that dividends of a specified rate on stock shall have been paid for the preceding five years.
>
> "The statutes of Maine, New Hampshire, Vermont and Rhode Island do not contain this requirement, but in place thereof, stipulate how many times interest on all funded debt shall have been earned.
>
> "It must be obvious to all thoughtful investors that the dividend requirement will always operate against the bonds. In the case of the Chicago, Milwaukee & St. Paul and many other instances which might be noted, the effect of this statute has been to invite the distribution of capital by way of dividends to stockholders.
>
> "There may be practical difficulties in the way of repeal or amendment; but by working with the superintendents of banks in the various states where this statute still obtains, it should be possible to work out a substitute which is more sound in principle."

Railway Officers

Executive

R. A. Gregory has been appointed secretary-treasurer and auditor of the Asherton & Gulf, with headquarters at Asherton, Tex.

Edgar Padgitt has been elected a vice-president of the Dallas Terminal Railway & Union Depot, with headquarters at Dallas, Tex.

Benjamin McKeen has been elected vice-president of the Missouri & Illinois Bridge & Belt, with headquarters at St. Louis, Mo., succeeding **C. E. Schaff.**

H. M. Lull, chief engineer on the Louisiana and Texas lines of the Southern Pacific, with headquarters at Houston, Tex., has been promoted to the newly created position of assistant to the president, with the same headquarters.

The general offices of the Clinchfield at Johnson City, Tenn., are being moved to Erwin, Tenn., as follows: October 16, legal department; October 23, purchasing department; October 30, traffic department; November 6, accounting and treasury departments.

A. R. Ponder, superintendent on the International-Great Northern and vice-president of the San Antonio, Uvalde & Gulf, with headquarters at San Antonio, Tex., has been promoted to executive assistant on the Missouri Pacific lines, with the same headquarters.

L. B. Allen, who has been appointed assistant to the vice-president of the Chesapeake & Ohio, with headquarters in Richmond, Va., was born on April 19, 1879, at Lexington, Ky. He was graduated from Kentucky State University in 1899, and entered railway service in the same year as a rodman with the Southern. From August, 1899, to January, 1904, he was on location and construction with the Chesapeake & Ohio. In January, 1904, he was promoted to assistant in the office of the engineer maintenance of way of the same road, which position he held until January, 1905, when he became division engineer of the Kentucky division, with headquarters at Ashland, Ky. From May 1, 1910, to January 1, 1914, he served as engineer maintenance of way of the Kentucky general division and the Chesapeake & Ohio of Indiana, having his headquarters at Covington, Ky. From January, 1914, to February, 1914, he was assistant chief engineer of the same road, with headquarters at Richmond, Va. In February, 1914, he was appointed superintendent of the Huntington and Big Sandy divisions of the same road, with headquarters at Huntington, W. Va. On July 1, 1916, he was promoted to general superintendent of the Western general division of the same road, with the same headquarters, and in January, 1918, was appointed superintendent maintenance of way for the entire system, which position he held until the time of his recent appointment.

L. B. Allen

W. T. Eldridge, president of the Rio Grande, has been elected chairman of the board of directors of the Oklahoma City-Ada-Atoka, with headquarters at Sugar Land, Tex. He was born on September 9, 1862, at Independence, Tex., and in 1898 was engaged in the construction of the Cane Belt (now the Matagorda branch of the Gulf, Colorado & Santa Fe) of which he was vice-president and general manager until 1903. In 1908 Mr. Eldridge became president of the Sugar Land, assuming in 1912, the duties of general manager and in 1917 those of treasurer, in which positions he remained until this year. During 1926 he was elected president of the Rio Grande and in September he was elected chairman of the board of directors of the Oklahoma City-Ada-Atoka.

Frederic G. Dorety, who has been elected vice-president and general counsel of the Northern Pacific, with headquarters at St. Paul, Minn., succeeding **M. L. Countryman,** retired, was born on July 20, 1878, at Boston, Mass. He attended the high school at Oakland, Cal., graduated from the University of California in 1900, and from the Harvard Law School in 1903. In 1904 and 1905 he engaged in the general practice of law in San Francisco, Cal., and during the next two years in Seattle, Wash. In 1908 he was appointed assistant United States attorney in Seattle and in the same year he entered railway service as an assistant attorney for the Great Northern at Seattle, Wash., where he remained until 1910, when he was promoted to attorney at the same place. In 1915, he was appointed attorney for Oregon and Western Washington, in 1918 he was promoted to assistant general counsel, with headquarters at St. Paul, and four years later he was again promoted to general solicitor. Mr. Dorety remained as general solicitor until his recent election to vice-president and general counsel.

Frederic G. Dorety

Financial, Legal and Accounting

E. P. Callan has been appointed auditor of the Dardanelle & Russellville, with headquarters at Dardanelle, Ark., succeeding **J. D. Riley.**

H. Mallin has been appointed treasurer of the Jacksonville & Havana, with headquarters at Chicago, relieving **Andrew Stevenson,** president, of the duties of treasurer.

H. Victor Spike, assistant attorney general of Michigan, has been appointed assistant general attorney on the Grand Trunk Western, with headquarters at Detroit, Mich.

Grady Brodnax has been appointed assistant treasurer of the Louisiana Railway & Navigation Company, a newly created position, with headquarters at Shreveport, La.

Byron Cassell, treasurer and assistant secretary of the Chicago, Indianapolis & Louisville, with headquarters at Chicago, retired October 14, and will be succeeded by **H. R. Mardorf,** assistant secretary and assistant treasurer. **H. B. Crane,** cashier, has been promoted to assistant secretary and assistant treasurer, and he will in turn be replaced as cashier by **F. S. Moss,** payroll clerk. Mr. Cassell, who has completed 56 years of service with this railroad, was born on April 21, 1854, in Clark county, Ind., and entered railway service on February 20, 1870, as a telegraph operator on the Louisville, New Albany & Chicago (now a part of the Chicago, Indianapolis & Louisville). In 1875 he was promoted to clerk in the secretary and treasurer's office and in 1880 he was promoted to chief clerk where he remained until May,

1906. At that time with the reorganization of the railroad he was promoted to treasurer and assistant secretary of the Chicago, Indianapolis & Louisville, a position he held until his retirement.

John B. Baskerville, who has been promoted to general claim agent of the Norfolk & Western, with headquarters at Roanoke, Va., was born on April 21, 1870, in Pulaski county, Va. He began railway service in November, 1887, as an assistant agent on the Norfolk & Western and in 1889 he was appointed a deputy collector in the United States Internal Revenue service, a position he held until 1896. During his service as a deputy revenue collector Mr. Baskerville studied law and was admitted to the bar in 1895. In 1896, he re-entered the employ of the Norfolk & Western, and served consecutively as telegraph operator, train dispatcher and cashier until 1899 when he was appointed assistant auditor of the Virginia & South Western (a subsidiary of the Southern). From 1900 to 1905 he served as traveling auditor of the Norfolk & Western and from 1905 to 1906 he was chief clerk in the claim department. He was then promoted to assistant claim agent and in 1913 he became acting general claim agent. The following year he was appointed assistant general claim agent, a position he held until his recent promotion to general claim agent. During 1923 Mr. Baskerville was chairman of Freight Claims, Div. VII, American Railway Association.

J. B. Baskerville

Operating

E. E. Wheeler has been appointed trainmaster on the Tucson division of the Southern Pacific, with headquarters at Phoenix, Ariz.

Thomas M. Flynn, acting superintendent on the Northern Pacific, has been promoted to superintendent of the Dakota division, with headquarters at Jamestown, N. D.

C. W. Dilfill has been appointed in charge of the operating department of the Detroit, Toledo & Ironton, with headquarters at Dearborn, Mich., succeeding **A. G. Garrett.**

C. A. Pinkerton, superintendent of transportation of the Detroit & Mackinac, with headquarters at East Holland, Mich., has been promoted to general superintendent, with the same headquarters.

B. W. Hillgard, auditor of the St. Louis, Troy & Eastern, with headquarters at St. Louis, Mo., has been appointed general manager, with the same headquarters, and will be succeeded as auditor by **L. R. Press.**

C. I. Luque, superintendent on the Mexican, with headquarters at Orizaba, Mex., and jurisdiction over the second division, has been promoted to assistant superintendent of transportation, with headquarters at Mexico City, Mex.

S. L. Clayton, assistant trainmaster on the Southern Pacific, with headquarters at Crescent Lake, Ore., has been appointed division examiner, with headquarters at Dunsmuir, Cal., replacing G. R. Williams, assigned to other duties.

A. B. Kelly, trainmaster on the Missouri Pacific in charge of the terminal at Little Rock, Ark., has been promoted to superintendent of the San Antonio division, with headquarters at San Antonio, Tex., and will be succeeded as trainmaster by **W. Wicker.**

F. H. Krick, yardmaster on the Eastern division of the Pennsylvania, has been promoted to assistant trainmaster on the Toledo division, with headquarters at Toledo, Ohio, succeeding **W. R. Triem,** who has been transferred to the Pittsburgh division, with headquarters at Pittsburgh, Pennsylvania.

Mechanical

A. H. Ostberg, mechanical inspector at the West Burlington shops of the Chicago, Burlington & Quincy, has been promoted to the newly created position of assistant superintendent of the Aurora shops, with headquarters at Aurora, Illinois.

J. M. Kerwin, master mechanic on the Chicago, Rock Island & Pacific, with headquarters at Trenton, Mo., has been transferred to the Illinois division and placed in charge of the locomotive and car departments, with headquarters at Silvis, Ill. He will be succeeded by **A. Hambleton,** master mechanic, with headquarters at Dalhart, Tex. **J. J. Fitzgerald,** acting master mechanic on the Chicago Terminal division, with headquarters at Chicago, has been promoted to master mechanic in charge of the locomotive department at the same place.

Purchases and Stores

J. D. Dunlap has been appointed stationer of the Missouri-Kansas-Texas, with headquarters at St. Louis, Mo., succeeding **F. E. Robinson.**

F. I. Plechner, assistant purchasing agent on the Great Northern, with headquarters at St. Paul, Minn., has been promoted to purchasing agent, with the same headquarters, succeeding **F. A. Bushnell,** resigned.

E. C. Van Valkenburg has been appointed purchasing agent and general storekeeper of the Oklahoma-Southwestern, with headquarters at Tulsa, Okla., taking over duties previously performed by **R. V. Miller,** general manager of the company.

Special

Benjamin Bell, Jr., has been appointed editor of the Chesapeake & Ohio and Hocking Valley employees' magazine, succeeding A. B. Tunis, resigned.

Dr. F. K. Ainsworth, chief surgeon and manager of the hospital department on the Pacific lines of the Southern Pacific, with headquarters at San Francisco, Cal., has retired under the pension regulations of the railroad, and will be succeeded by **Dr. W. B. Coffey.**

Obituary

John A. Spoor, chairman of the board of directors of the Union Stock Yard & Transit and first president of the Chicago Junction, died on October 15, at his home in Chicago after an illness of two years. He was born on September 30, 1851, at Freehold, N. Y., and was educated at the Hudson River Institute, Claverack, N. Y. He entered railway service in 1885 with Wagner Palace Car Company and in 1893 he was appointed general manager, a position he held until 1897, when he became president of the Chicago, Hammond & Western. In the following year when this railroad, the Chicago & Indiana State Line and the transportation department of the Union Stock Yard & Transit were consolidated as the Chicago Junction, he was chosen as president. In 1913, Mr. Spoor was elected chairman of the board of directors a position from which he retired in 1923 when the Chicago Junction was leased to the Chicago River & Indiana. He was elected president of the Union Stock Yard & Transit in 1903 and became chairman of the board of directors in 1913. Mr. Spoor was a director of the Pullman Company and had been active in many other business enterprises until two years ago.

Railway Age
Motor Transport Section
Devoted to the Co-ordination of Railway and Highway Service

Vol. 81, No. 17 October 23, 1926

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The Meaning of Pinchot's Disapproval of Railroad Highway Charters

AS reported in the *Railway Age* of October 16, Governor Gifford Pinchot of Pennsylvania, has refused to approve the charter applications of the Pennsylvania and the Reading for subsidiary highway corporations. What does this action mean to the future of railroad motor vehicle operation in the Commonwealth of Pennsylvania? Nothing whatever. The Pennsylvania Railroad is already operating on the highways through permits granted to its supervisor of motor service and the governor's position cannot affect this operation. The Reading has not yet obtained a decision from the Public Service Commission on its applications for highway permits, so it is not affected. But what of the future? Simply this—Governor Pinchot will retire as governor at the end of the year, having been overwhelmingly repudiated by the voters at the primary election in his effort to become a candidate for United States senator. It is to be hoped that his successor may adopt a more reasonable attitude. Moreover, the action of the governor in withholding an application for a charter after the Public Service Commission has approved it is of questionable legality and, were not Mr. Pinchot's days as governor numbered, would doubtless come before the courts.

Railroads Don't Jump Headlong Into Anything

IT is futile to expect the railroads to leap enthusiastically into bus and truck operation. Yet that is exactly what many persons, including some manufacturers of bus and truck equipment, appear to expect. The policy of American railroads has always been to approach new methods and practices slowly. Their conservatism has been frequently deplored, yet it is not undefendable. But undefendable or not, their conservatism exists and cannot be disregarded. Many factors have contributed to the slowness of the railroads to undertake bus and truck operation. They have been deterred to no small extent by the dismal failure of so many independent operators; failures not discouraged, to say the least, by the ultra-liberal policies of most bus and truck manufacturers in the sale of their products. The railways have been held back also by the doubt in their minds regarding the attitude of regulatory commissions. They have been held back by other things as well. But they cannot now be accused of continuing complete disregard of and lack of interest in the possibilities of the bus and truck as transportation tools. They do insist that their "possibilities" be demonstrated conclusively as something more than possibilities, and rightly so. The railways are trying out buses and trucks. They are finding out for themselves by operating a few buses and through participation in the investigation of the Railroad Motor Transport Conference, what buses and trucks can do. Once they are convinced, they will go ahead, but not before. In spite of the apparent slowness of the railways in taking to the bus and the truck, the progress they have made, some of which is not apparent to the casual observer, forecasts the possibility of early and general adoption of the highway carriers.

Chicago Railroad Motor Conference Will Repay Wide Attendance

THE Railroad Motor Transport Conference will hold its next meeting in Chicago in December. While no definite date for the meeting has been set or final program announced as this issue of the Motor Transport Section of the *Railway Age* goes to press, sufficient preliminary arrangements have been made to assure the kind of meeting which will be of profit to all railroad men who attend. A two-day session is proposed, one to be devoted to freight and the other to passenger transportation. The use of motor vehicles by the railroads in line haul and terminal service will be dealt with separately. As we have observed previously, the first meeting of the Railroad Motor Transport Conference at Providence and Boston during the latter part of August set a high standard of hard work and accomplishment. To this standard the Chicago meeting will undoubtedly adhere. Because of the importance of the problem and the ability of the Conference to render valuable service to the railroads in solving it, the meeting deserves wide support and attendance. Moreover Chicago is centrally located. This, with the agenda including all phases of the motor vehicle problem from a railroad standpoint, should make representation at the meeting of value even to those railroads which are as yet interested in motor transport only as observers.

Winter Weather Need Not Stop Your Buses

WINTER, with its snow and low temperatures, puts bus operators to a severe test of their ability to overcome unfavorable conditions, but it need not render them helpless to maintain their service. Rather, it presents an opportunity to display to the public a capacity to keep going which will make many friends. There have been numerous striking examples in the past in which buses have kept to their schedules in the worst kind of weather. It has not been easy to accomplish such remarkable results, but it has been done and can continue to be done. Winter bus operation calls for the maintenance of all equipment at the highest standard. Weaknesses in buses which do not come to light in warm weather frequently appear in winter, usually at times when bus operators can least

afford to have them appear. A breakdown on the road in bad weather is a serious matter, affecting not only schedules but the comfort of passengers as well. Maintenance officers should see that inspections and repairs are made with extreme care to prevent such occurrences. Electrical equipment in particular should receive the maximum of attention. The job of the operating department is to keep the roads open. In this the cooperation of state highway commissions is usually available, but no bus company should depend upon this entirely. Snow fighting equipment should be a part of the rolling stock of every bus company. It is expensive, to be sure, but not nearly so expensive as suspended schedules. More people ride the buses in winter than in summer because fewer automobile owners use their cars. Hard work on the part of the maintenance and operating departments can make many new friends and patrons for their buses this winter.

The Question of Personnel

THE success of a railway bus company, or any other kind of bus company, depends as much upon the kind of men that it has as employees as on any other single factor. The importance of having an alert, courteous, careful, efficient body of men as bus drivers or bus station attendants cannot be too strongly emphasized. Railroads newly entering the bus operating field have been given a high standard in this respect by the highway operators of longer experience. The one impression that remains most strongly in the minds of most motor bus passengers is that of the unfailing helpfulness and courtesy of the attendants. Motor bus operators in the past have recognized the fact that their drivers and other employees dealing directly with the public have it in their power to create or destroy the good will of patrons. Consequently, they have given to the selection of their employees their closest attention, following this careful selection with an equally careful training. The result has been the building up of a body of employees who, for the attributes so much to be desired in men who serve the public, are scarcely surpassed by any other similar group.

The public has not failed to notice this. The apparent realization of bus company employees that they can make or break the bus as a popular means of transportation and their consequent efforts to meet this responsibility have made their impression on bus riders. Favorable comment is very frequently heard; the comments are passed on and friends for the buses are made. The value of the friends in dollars and cents cannot be reckoned, but no one will deny that it is far greater than the extra cost of securing and training the best employees.

Railway bus operators may well take this leaf from the book of those more experienced in the business. They too are trying to make friends. The supplementing of their rail service with bus service is a long step in this direction, which can be made even longer with the aid of the right kind of employees. Bus companies are faced with the task of selling something new. In this sales campaign, the employees themselves are the best salesmen.

The policies of the various railroads now operating buses vary with respect to their selection of employees. Some follow the practice of utilizing the services of men released from their train service. Others take men untrained in the transportation business or men formerly employed by other bus lines. Something is to be said in favor of both methods, but in general, if the necessary high type of men is available, the plan of manning the buses with former trainmen, perhaps left without work by reductions in train service made possible by the operation of buses, is most commendable.

A former trainman is not at once a good bus attendant. He has much to learn and his record as a bus employee depends upon the manner of his teaching. Some companies require several weeks of instruction and another week or two of work under close supervision for the training of their men. It has been found well worth while. It is not too much time for the weeding out of those who are not of the high type required by successful bus operation. Once good men are obtained, they can be retained by management that is considerate and helpful. That the turnover in the personnel of bus companies be kept at the minimum is rendered doubly desirable by the higher cost of securing and training only the best men in the first place.

The railways have been occasionally accused, at times justifiably, of having too many employees to whom courtesy, helpfulness and consideration for the interests of passengers are strangers. The utmost care should be taken by their bus operating subsidiaries to prevent such an opinion of their bus drivers and attendants becoming fixed in the minds of their patrons. This can be done if the selection and training of bus employees is given the proper attention from the outset. Railroads already engaged in bus operation have been notably successful in this respect.

After Investigation—What?

WITH the hearing at Washington on October 25, the Interstate Commerce Commission will conclude its investigation into motor transport conditions in the United States. Three months have been spent in taking the testimony of informed and interested witnesses, numbering in the hundreds. Reams of facts and opinions have been placed in the record. A comprehensive and doubtless accurate picture of the place of the bus and the truck in our transportation system has been acquired. To what end? To the end, it is to be hoped, that fostering regulation will be soon forthcoming. The commission had two aims in instituting its investigation. First, it desired to inform itself regarding the work that the highway carriers are doing and the effect that such work has had upon the railways for whose welfare it is in a measure responsible. This was to be for its own information, perhaps to be used in the future. The second purpose was to learn about the bus and truck in order that the commission might recommend to Congress whether or not these carriers should be regulated and the form and scope that such regulatory laws should have.

The commission now has a background of knowledge upon which to build its conclusions and its recommendations. Its finding should answer many interesting questions, perhaps show the fallacy of many current delusions. They should show how much business the buses and trucks have actually taken from the railroads, whether or not they are being operated independently at a profit, how inadequate the regulation of them now is, and who really favors or does not favor their full regulation, and why. The question of regulation is important to the future progress of motor transportation. The wide difference of opinion on it has been caused, we believe, by a lack of complete information such as the commission now has. This difference of opinion should be largely reconciled by the commission's conclusions.

The Railway Bridge Over Lynnhaven Inlet Is Used by the Buses

Bus Service Installed by Norfolk Southern

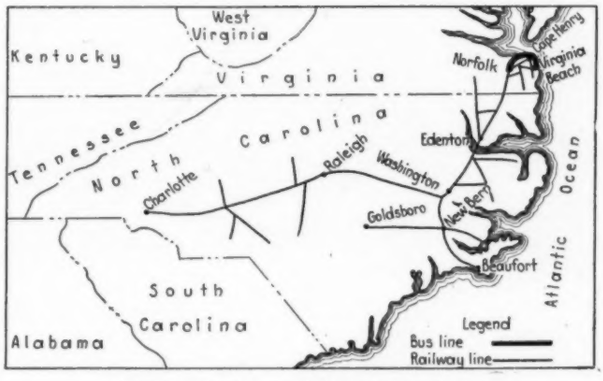
Train accommodations between Norfolk, Va., and Virginia Beach supplemented by highway carriers making 11 *round trips daily*

THE Norfolk Southern Bus Corporation, a subsidiary of the Norfolk Southern railroad, is operating three motor buses, making 11 round trips daily, including Sunday, from Norfolk, Va., via Cape Henry, to Virginia Beach, a distance of approximately 24½ miles. The schedule time between the terminals is 1 hr. 15 min., comparing with electric train schedules over the same route of approximately 1 hr. 10 min.

The bus route closely parallels the railway route for the entire distance and uses the railway bridge over the Lynnhaven Inlet. The bus schedules are arranged to supplement the railway service, the buses leaving the terminals between the departing times of trains. Thus buses leave Norfolk for Cape Henry, Virginia Beach and intermediate stations at 6:00 a.m., 7:15 a.m., 8:30 a.m., 10:30 a.m., 12:30 p.m., 2:30 p.m., 4:30 p.m., 6:00 p.m., 7:45 p.m., 9:00 p.m., and 10:45 p.m., and trains for the same points leave at 6:15 a.m., 6:50 a.m., 7:30 a.m., 9:30 a.m., 11:35 a.m., 1:25 p.m., 3:30 p.m., 5:35 p.m., 6:35 p.m., 8:00 p.m., 10:00 p.m., and 11:15 p.m.

Beginning of Bus Operation

The Norfolk Southern formed the Norfolk Southern Bus Corporation and began the operation of buses between Norfolk and Virginia Beach to meet the competition of an independent bus line. The Norfolk Southern formerly operated a steam railroad from Norfolk due east to the coast with the terminus at Virginia Beach. This was subsequently extended north along the coast to Cape Henry, the mouth of Chesapeake Bay. Later this line was electrified and operated as an interurban system. With the purchase of the Chesapeake Transit



Norfolk Southern Railroad Bus Lines

Company, a line was acquired from Norfolk to Cape Henry along the shore of Chesapeake Bay and a complete loop electrically operated, with Norfolk as a western terminus, was completed and placed in operation. This line traverses one of the best trucking sections of Virginia, serving the principal resorts along Chesapeake Bay and the Atlantic Ocean and handling an extensive freight business in addition to its electric passenger service. It has been operated as a part of the Norfolk Southern railroad system.

The two lines from Norfolk to the Atlantic coast, which constituted the loop, were designated as the north and south routes, the south route being the direct line from Norfolk due east to the Atlantic Ocean at Virginia Beach. About five years ago a concrete boulevard was completed from Norfolk to Virginia Beach which closely parallels the electric line known as the south route, for the major portion of the distance. With the completion of this boulevard, independent bus operators became active and succeeded against the opposition of the railway company in establishing a bus line from Norfolk to Virginia Beach.

The north route crosses an arm of Chesapeake Bay known as Lynnhaven Inlet, between Norfolk and Cape Henry. This body of water is approximately one-half mile wide at the crossing, but the long approaches which the railway built for its bridge restrict the bridge length to approximately 1,800 ft. The state highway system has been completed north of Virginia Beach around Cape Henry and back toward Norfolk as far as Lynnhaven Inlet. Likewise, a road has been constructed from Norfolk paralleling the north route as far as Ocean Park, at the west approach of the Lynnhaven bridge. Owing to the difficulty and the expense of crossing the inlet, however, the county has as yet been unable to construct a bridge at this point. Consequently the electric operation has been more or less free from competition on its north route.

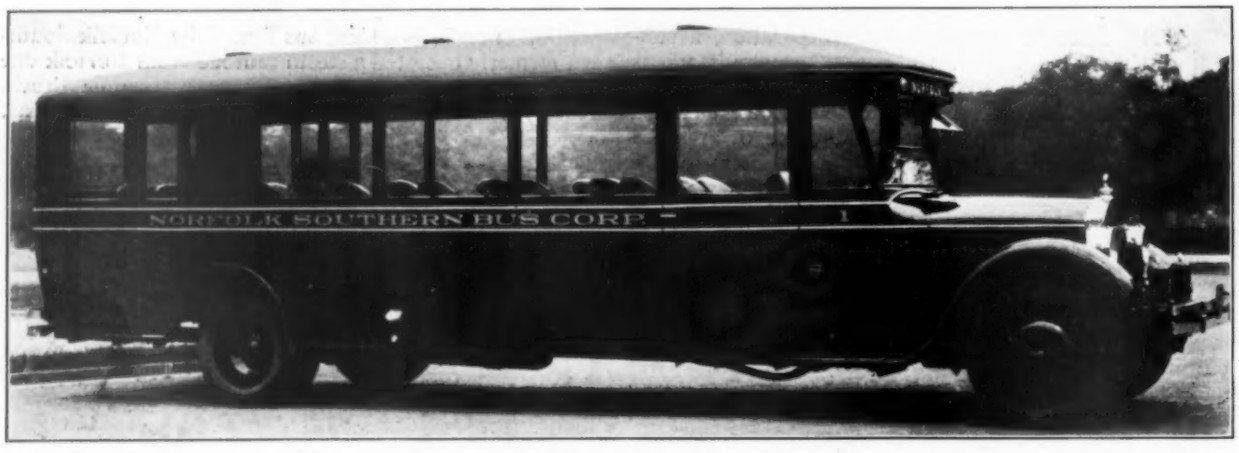
In Railway's Interest to Operate Buses

During the past year, however, the state highway department has completed plans for bridging the inlet and simultaneously with this announcement independent operators applied for certificates of convenience and necessity to operate a bus line parallel to the north route, expecting to operate in sections until such time as the bridge was completed.

The management of the Norfolk Southern, considering the fact that it was the original transportation agency in the field, and had originally pioneered and developed the necessary transportation agencies for this territory, took the position that if the territory demanded bus transportation and the regulatory bodies were of the opinion that they should have it, the interests of the existing carrier and the community as a whole would best be served by the agency already in the field expanding its facilities to the newer form of transportation and co-ordinating it with the existing facilities, in order that unwarranted competition should not destroy the existing carrier's ability to serve the public. It was recognized that there were some parts of the territory that might better be served by bus service with some restriction of electric service, and the proper balance of the two and operating economies might enable the carrier to carry on a new form of transportation and better develop the territory served. The railway company accordingly made application for a certificate to operate from Norfolk to Virginia Beach over the north route, by way of Cape Henry.

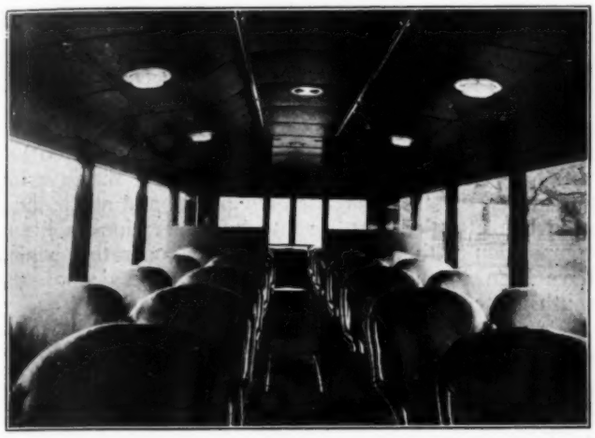
An independent bus line paralleling the south route had previously asked for an extension of a portion of the

Front View of the Mack Bus



Mack Bus Operated by Norfolk Southern

north route, and a second operator had asked for a section over a portion of the north route, so that at the hearing before the State Corporation Commission, two independent bus agencies and the existing rail carrier were applying for bus permits over the north route. The State Corporation Commission considered that the existing rail facilities were necessary and that any bus service



Interior of Norfolk Southern Bus Showing Arcade Type Roof Construction

permitted in this territory could best be operated by the existing carrier. Accordingly, it granted the permit to the Norfolk Southern Bus Corporation and refused the certificates asked by the independent operators.

Railway Bridge Converted

Part of the consideration in granting the certificate to the railway bus subsidiary was the fact that the railway, having a bridge already across the Inlet which it proposed to convert into a joint bus and railway bridge, was in a position to give through service in its buses to the coast, while independent operators could only operate sections one each side of the Inlet and would therefore be unable to apply for a through route until the state bridge was completed, which it appeared would be several years in the future.

Upon the granting of the permit, Norfolk Southern proceeded with the necessary plans for converting the railway bridge over Lynnhaven Inlet into a joint rail and bus bridge. In view of that fact that the gage on bus wheels would conflict with the gage of the track it was impossible to operate the bus in the center of the existing bridge. Instead it was necessary to operate one line of the bus treads in the center of the track and the other line on the south side of the north rail. The bridge was constructed of nine foot ties with the usual standard guard rail. This did not provide sufficient room outside of the rail for the operation of the bus over the bridge. The plan finally determined upon provided for the laying of a jack stringer outside of the ordinary bridge chords for the full length of the bridge. Intermediate ties 12 ft. 6 in. long were then inserted between the standard railroad ties and the 9-ft. bridge ties were placed so as to lap the jack stringer and the guard rail was adjusted accordingly. This provided a solid seven inch deck on the stringer.

A railing was constructed on the north side of the bridge where the bus wheel treads were outside of the rail. The rail laid on this bridge is of 90-lb. section which has a sufficient height to act as a partial guard rail for the bus. In addition, timber guards were provided so that full protection was given to the operation of the buses across the bridge.

The operation of buses and trains across the bridge was carefully considered by the operating officers and a unique system of protection worked out, which is considered to insure maximum safety in operation. On each side of the bridge, approaches are carried to the highway systems. Where these approaches cross the right-of-way line of the railway company, gates are installed which are painted white with the proper trespass signs on them. These gates are provided with locks. The trolley system is sectionalized just east and west of these approaches with a standard stop sign next to the track, the trolley breakers being back of the stop sign. All trains operate under instructions to come to a full stop at the stop sign.

The Norfolk Southern Has Two White Buses

Feeder switches are provided at each end of the bridge. The bridge tender, before opening the gate on the approach of a bus, pulls the switch, sectionalizing and killing the trolley between the bridge approaches. After this the bus is permitted to proceed. If a train should approach at this time and come to a dead stop at the stop sign motormen are instructed to test for power. If the block is occupied by a bus, the electric train has no power

and cannot proceed until the bus has passed out of the block, the gates locked, and the feeder switch again restored. When the motorman finds his power restored, it is the signal to proceed.

No delays have been experienced at this crossing and the operation over the bridge under this system has been controlled entirely by the bridge tender through the sectionalizing switch and gate locks.

Mack and White Buses Used

The buses operated by the Norfolk Southern Bus Corporation consist of a 29-seat Mack bus and two 30-seat White buses, the extra seat on the White buses being provided by a folding seat parallel to that of the driver. The rear section of the buses is sectionalized with glass and leather partitions, with a rear door controlled from the front. The buses are 94 in. in width, the wheel base is 230½ in., and the aisles are 17 in. in width.

The roof is of a special construction made in accordance with specifications drawn by Norfolk Southern engineers. It is of the arcade type, providing 74-in. head room over the aisle while giving the low side lines and the parlor car appearance. The seats are of genuine leather and the head lining inside is of Pantasote, matching the seat leather. The floor is covered with Pullman rubber. The White chassis are equipped with bodies manufactured by the Bender Body Company, Cleveland, Ohio.

Tickets Honored on Bus or Rail

Tickets for transportation between Norfolk and common points on the north route are honored either on the buses of the Norfolk Southern Bus Corporation or the trains of the Electric division of the Norfolk Southern railroad. Hand baggage is carried on the buses and trunks may be checked by passengers holding Norfolk Southern Bus Corporation transportation to be handled in regular baggage service of the Norfolk Southern railroad, provided such stations as indicated by the bus line transportation are also served by the railway.

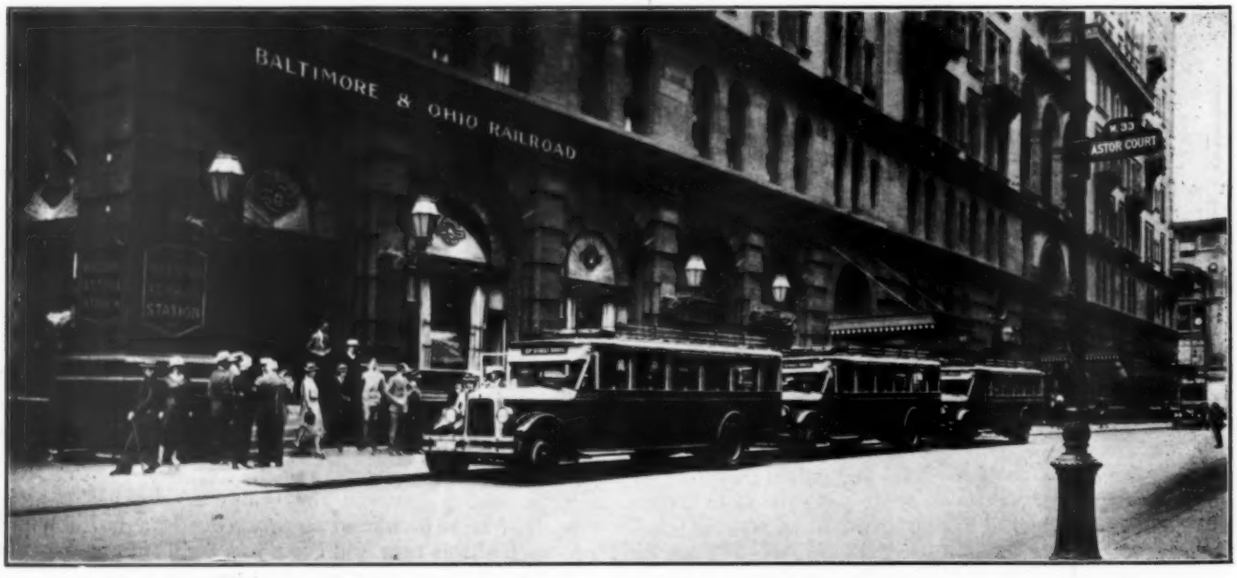
The buses are maintained and repaired in the shops of the railway company at Norfolk, daily inspections being made after 250 miles of operation. The oil in the buses is changed after 750 miles. The shops are those of the Electric division, and the maintenance of the buses has been carried on with no increase of force or organization.

Results of Bus Operation

The bus corporation has been in operation for only a few months but the results to date have seemed to justify the company's policy in protecting the electric service by expanding its transportation facilities to include both rail and highway transportation. Its bus operation has apparently insured the north route against the invasion of independent transportation companies and at the same time has afforded north route bus operation in direct competition with the independent bus operators which have been competing with the electric service on the south route.

THE DUTCH RAILWAYS, according to reports from the office of the United States trade commissioner at The Hague, are considering the use of buses to supplement and feed their rail lines.

"INSOFAR AS SHORT DISTANCE HAULS are concerned, less than carload freight and local service on lightly patronized lines is gravitating from the railroads to the motor vehicles. We may as well concede that this a a natural process and economically sound. In combination with this form of traffic, there is a wonderful field for both trucks and buses to act as feeders of the railroads to supply service in sparsely settled territories not warranting the construction of rail lines, and to act as connecting links between existing railroads. This, too, is all in the direction of sound development, and is based upon good business principles. Instead of injuring the railroads or impairing their capacity for rendering service, it will actually help them and supplement and improve the service which they are capable of furnishing to the public."—G. O. Ogden, Traffic Manager, P. R. R., Eastern Region.



Exterior View of B. & O. Waldorf-Astoria Station, New York, Showing Train Connection Motor Coaches

Views of Experienced Operators on Bus Problems

Committee on bus operation of the A. E. R. A. transportation and traffic sections reports at Cleveland

AN extended discussion of various bus operating problems was presented by the committee on bus operation at the convention of the American Electric Railway Transportation and Traffic Association at Cleveland, Ohio, on October 7. The committee, of which J. B. Stewart, Jr., general manager of the Cincinnati Street Railway Company, was chairman, covered the subjects of rates of fare, proper agencies to operate bus lines in competitive territory, chartered bus operations, package express handling, utilizing the bus to develop better public relations, supporting non-paying route extensions, tire mileage contracts and other topics. An abstract of these features of the report of particular interest to steam railway bus operators is presented below:

Rates of fare for interurban routes present a different problem from that of the city bus lines, for the primary reasons that density of traffic is very low by comparison and the scheduling of equipment so as to provide for its most economical use is more difficult. Expressed in other words, the "load factor" on investment and other constant expenses of the business, such as administration, superintendence, drivers, and other costs that are independent of the amount of the traffic, is low, and consequently the cost per passenger carried is proportionately high.

Interurban Fares

In considering interurban fares, two conditions must be reckoned with, viz., (a) operating in developed territory, and (b) starting on pioneer routes. The first would largely involve operations paralleling existing lines, either trolley or steam railroads, coming after increasing demand for this new means of travel, and the second condition is encountered with the opening up of new territory or meeting the desire for shorter routes between commercial centers, county seats, resorts, etc. As a general proposition, therefore, the interurban traffic will be comparatively lean, and self-sustaining fares for the new bus service will not be opposed by the riding public due to character, convenience and time saved as compared with other modes of transportation.

Long bus lines for through riding, terminus to terminus, for instance in excess of 40 miles, should only be undertaken after a special census of the demand for travel, and in all probability will not be found to be warranted, from present indications, unless the small terminus exceeds 25,000 population and the total of both terminals is in the neighborhood of 150,000. There will probably be exceptions where service is furnished in and out of the larger cities and the principal redistributing centers that radiate out from the key or hub cities.

It must also be kept in mind that the interurban lines are more greatly affected than city service through the extended use of the private automobile. In cities, severe parking and traffic regulations have caused owners to use their cars less frequently in the daily travel between home and place of business. Therefore the interurban fare must of necessity be higher than the city fare on account of the low density of traffic. High rates of fare should be insisted upon, as feeder and auxiliary service should not be undertaken at a loss to be borne by established bus routes or the rail lines, unless there are offsetting advantages or some particular expediency.

Route and territories may be acquired for which normal fares would not produce sufficient revenues. No business should be undertaken on its own account for which under-selling fares are necessary to create traffic, and a rate of fare which will barely, if at all, support the investments made in such business should never be adopted. While this note of caution must be general and is undoubtedly appreciated by the industry as a whole, yet ventures are undertaken, and probably will still be made, that do not have a sound economic basis for existence. Unnecessary and unprofitable investments must be vigorously opposed, in order that transportation agencies may expand in a rational manner.

Comfort and attractiveness are demanded by the American public, and more is expected of the transportation agency than in former days. This is particularly true where bus service is being provided. Bus service is theoretically a substitute for the private automobile in many cases and consequently should reasonably approach that means of transportation in attractiveness. Having become familiar with the relatively high cost of one's own car, the rider should not object to a new basis of fare for bus, higher than the levels to which the rail line fares have been increased during recent years. It is important that the proper differential be established when the service is first inaugurated.

It is almost universally appreciated at this time that bus service can not be successfully rendered at a low rate of fare. A careful study of the factors surrounding the route to be covered should be made and the fare that will induce the greatest amount of traffic that may be handled economically will prove best for both the public and the utility.

Practically where the buses are co-ordinated with cars and expected to give a service identical with cars the fare should be approximately the same. If, however, the bus furnishes any element of service which the car does not furnish, this added element should provide a logical reason for a higher rate. In the last analysis, the three elements of service from the point of view of the public, are safety, speed and comfort. The bus, by special routing and by the use of special equipment, can furnish speed and comfort beyond that possible with the trolley, and it is entirely proper that higher compensation should be received for service of a higher quality, —and obviously the higher the quality, the higher the fare it should receive.

Proper Agency to Operate Bus Lines in Competitive Territory

During the past three or four years the street railway industry has been faced with the competition of the

motor bus operated by independent operators, who, in most part, have not been financially responsible agencies. Such companies, as is well known, have flourished during the first months of operation when maintenance costs were low, and the success of such operations have led others to attempt to make a fortune in the same way. Such competition gradually but surely is ceasing to exist, due to increased cost of operation.

This period of motor coach development by the independent operator was closely watched not only by the electric railway companies, but also by the steam railways. As a result, steam railroads saw in the motor coach and motor truck an opportunity to discontinue expensive service on branch lines with steam trains requiring from four to six men to operate, and which on account of high cost could only be operated at infrequent intervals, and substitute the motor coach operated by one man which could be scheduled at frequent intervals, therefore giving better service to their patrons at much less cost.

During the past year or so, motor trucks have been used to carry freight within a reasonable radius of large distributing centers. The local freight train operating on main tracks within the congested territory around large distributing centers has always been a very expensive means of distributing freight, and the substitution of motor trucks in this service has permitted increased freight and passenger traffic without expensive track expansion, through the elimination of the local freight trains from the main line tracks.

When Steam Roads Enter the Field

The use of motor trucks and motor coaches by steam railroads has introduced a much more complicated situation for the electric railway in territories where both are operating, than was the case with the independent motor coach operator. The steam railroad is an established carrier, which has been losing large sums of money each year by the operation of branch lines and local freight service, and can well afford to carry the much smaller loss occasioned by motor coach and truck operation than could the independent operator. The tendency of steam railroads is not only to substitute motor coaches for its branch line operations, but to extend such motor coach routes to furnish feeder lines to its main or branch lines.

In and around Philadelphia, the Reading Company proposes to establish a large number of such coach route extensions into territory which heretofore has been served exclusively by electric lines. The same condition prevails in other sections of the country, and one of the problems which the electric and steam railway managements will have to face within the next few years will be a co-ordination of such operations, in order that there may not be ruinous competition.

Chartered Bus Operations

Most transportation companies are required to have in their fleets a sufficient number of vehicles to take care of the morning and evening peak-load conditions. During the remainder of the day and evening these vehicles are not in service, and any business which can be secured during the off-peak period is therefore most desirable.

Your committee believes the policy that has been adopted by a number of companies of having a special department to develop this class of business is very desirable, and that the expense of the maintenance of such a department is well worth while.

In one city, the transportation company has a working arrangement with the established taxicab company which has "stands" in the principal hotels and railroad stations whereby the taxicab company advertises and secures special coach business, which is turned over to the transportation company to furnish the coaches and operators. The taxicab company charges its customers the established transportation company's rate, and receives a commission from the transportation company. This plan relieves the transportation company of the maintenance of a special department, and at the same time gives it a wider and better distribution of agencies to secure business. The operation of motor coach tours has been developed to a considerable extent in some sections of the country, particularly where there are a large number of points of interest within a reasonable distance of the principal city. This form of special coach service is one which can be very well copied in many places, but requires a specially equipped coach in order that the tour may not become tiresome.

Theatre parties constitute a source of revenue which should not be overlooked by a transportation company, particularly those who operate for some distance from a principal city. The trip is started after the evening rush hour when equipment is available and returns to its garage close to midnight. The rate for such service, when divided among a load of passengers, is relatively low, and the idea of having a vehicle devoted to the service of the particular party appeals to the passengers.

Package Express Delivery Including Handling of United States Mail

In some sections of the country the business of carrying passengers by motor coaches has been extended to the carrying of package express and United States mail. This is particularly true in California and several other localities where coaches operate over long distances with nominal loads between certain points and capacity loads between other points, and the package express helps to carry the empty seats for pick-up service along the line where otherwise it would be necessary to figure closely to capacity loads if it were not for the package express. It has been found that package express induces passenger traffic from those who have used the express service and found it valuable.

Package express service on motor coaches has been found to fill a need with the residents of small towns around the metropolitan area in a great many ways. The small town store owner never has to lose a sale because the commodity desired is out of stock or because something special is wanted in a hurry, and not carried in stock, as he can use the long distance telephone to his nearest large city and have the commodity sent out by package express. This means in most cases that the commodity is delivered within two or three hours of the time the request is made. In one operation it has been found that the principal commodities handled are such items as automobile repair parts, cut flowers for funerals, weddings, etc., optical supplies and repairs, radio supplies, clothing, hats, sporting goods, newsletters, newspapers, magazines, and United States mail where routes are between post offices.

The carrying of packages and United States mail must be done in such a manner as to cause the least inconvenience to the passenger who, in the long run, is the one who must be satisfied if motor coach operations are to continue. The carrying of packages must not entail too long stops to handle the packages, nor should it interfere in any way with the comfort of the passengers in the coach through the taking up of too much room.

Carrying United States mail by motor coaches can, if the contract is properly arranged, provide a satisfac-

tory source of revenue. Steam road and electric railway experience with United States mail has not been such as would cause an operator to endeavor to secure a mail contract. Experience of motor coach operators, however, has been that they can secure a reasonable price for the carrying of United States mail and in cases where the routes are so arranged this forms a very desirable class of business.

Utilizing the Motor Bus in Developing Better Public Relations

The rapid increase in activity of railways in inaugurating auxiliary bus service is an encouraging recognition of certain advantages inherent in this type of vehicle. It is also an evidence of adaptability to new conditions on the part of managements in taking advantage of a new facility to satisfy the demand of the riding public for additional kinds of service. Communities rightfully assume a feeling of pride when they may point to the existence of the most modern facilities in their midst, and this attitude should provide an opportunity for the utility in improving public relations.

Supporting Non-Paying Route Extensions

It should be assumed that if a bus line is installed to act as an extension to an existing route there is a proper economic reason for the installation. Usually such a service results from the development of territory beyond the end of an existing utility. The railway company is then faced with the problem of either extending its tracks or putting in a bus line from the terminus of the rail line. If the bus is chosen, it is usually because of the lower capital investment necessary. If the development of the section is normal and logical, further increases in population will immediately follow the extension of the facilities and the earnings of the extension should show a continuous and healthy increase. It may not make expenses as it starts, but the trend of traffic increase should be such as would indicate that within a reasonable period the revenue will be sufficient to pay expenses. If such is not the case, the section then becomes stagnant because the growth has stopped. When this happens, there are two remedies: first, obtain a higher fare on the extension, or second, discontinue it.

No non-paying operation should continue indefinitely, after the section it serves becomes stagnant by the stoppage of development. It should either pay a fare sufficient to cover cost of operation or the service should be abandoned. This is one big advantage that extensions by bus have over extensions by rail, because the laying of rails give the operation a greater permanence than the bus route has. Such rail extensions made in the past, with the hope that development and population would follow sufficiently to make them self-sustaining at some future time, is the reason why so many traction companies are today faced with non-paying mileage, which they are loath to abandon but which will never be remunerative. If the section is growing, however, it is a different matter, because growth will sooner or later bring enough business to cover cost.

Tire Mileage Contracts

During the past year the attitude of tire manufacturers has undergone several rather radical changes in policies. During the latter part of 1925, tire manufacturers refused to enter into contracts to furnish tires on a mileage basis. They felt and endeavored to convince the operators that contracts of this type were unfair to the operator as well as to the manufacturer. Efforts to secure tire mileage contracts during the latter part of 1925 and the first few months of 1926 were in general unsuccessful.

There seemed to be a break in this attitude of the tire companies during the spring of 1926, after rubber prices became more reasonable and stable, and a number of propositions for furnishing tires on a mileage contract basis were submitted in various parts of the country. In one instance out of a total of 16 quotations submitted, six were based on mileage—the prices ranging down from four cents per bus mile.

In considering tire mileage contracts, a number of conditions must be taken into consideration. Some bus companies prefer to have the tire contractor purchase tires which come as original equipment on the buses, and from that time forward maintain and replace tires as it becomes necessary, make all necessary repairs and render road service as may be required. In other instances, the company furnishes and repairs the tires as it becomes necessary.

Tire contracts have been written in which the tire company agrees to make repairs on tires which had already been on the buses, until such time as they must be replaced.

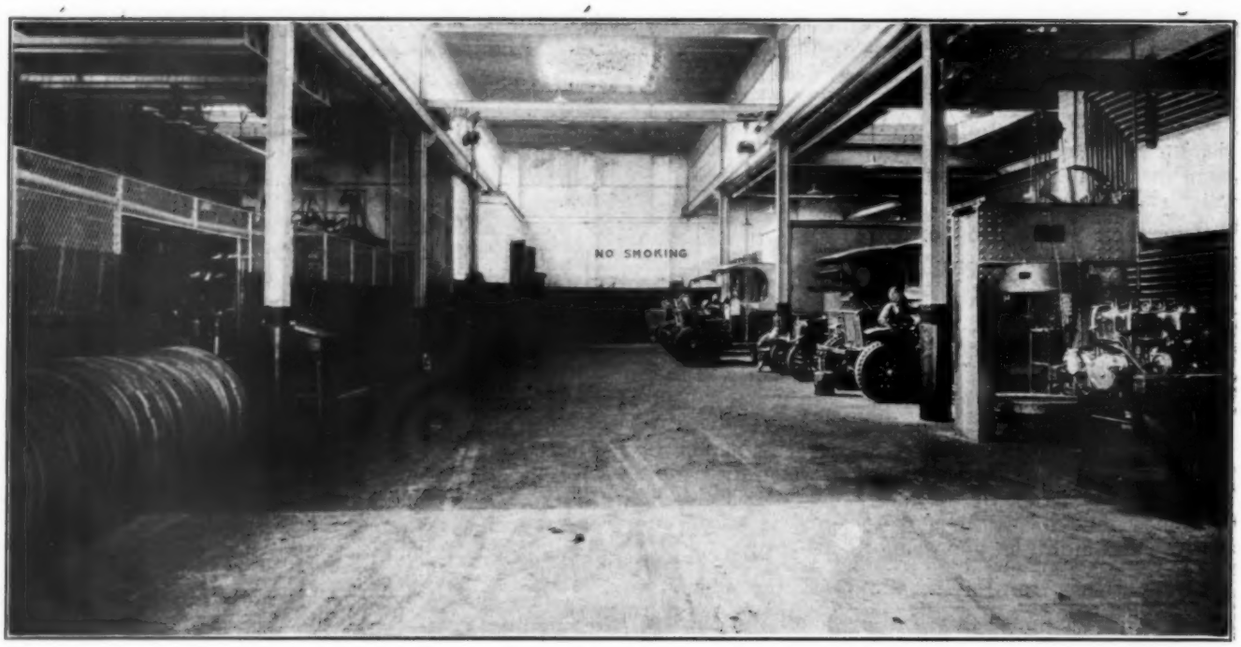
A number of minor conditions can be written into the tire mileage contracts as they are needed, due to local conditions.

During the past few months a large number of tire mileage contracts have been entered into. There seems to be a greater desire on the part of tire companies at the present time, to handle their products through mileage contracts than has ever been apparent.

Stabilizing of the tire cost to the operator through a mileage contract appeals to a great many operators, as it removes from bus operating costs a factor which may amount to considerable money if not closely watched. The prices which have been quoted on late contracts are more reasonable, and are such as would seem to be lower than any company could possibly arrive at by buying tires in the open market, and making its own repairs.

Development Cost

As is true in most enterprises, the initial period of operation entails certain losses. In organizing bus service it will be found that revenues will not be sufficient to meet all operating costs and fixed charges for some time, although the fares may be on a reasonable basis for developing the business and will return a fair profit after the service has been well established. Such early losses will represent a relatively large amount as compared with the investment in equipment, garages, shops, offices and terminals, and this percentage will be very high in comparison with the similar expense in rail line development. It is, therefore, desirable that a careful record be maintained from the outset so that the data will be available should fares at any later time be challenged.



The Shop, Showing How Center Aisle Is Kept Clear

L. I. Contractor Has High Maintenance Standards

Chassis standardized and parts interchangeable, road service well developed, inspection consistent

THE Motor Haulage Company, Inc., New York, handles the motorized terminal operation for the Long Island Railroad which was described in the *Railway Age* of July 24, 1926, page 157, and has recently entered into a freight handling contract with the New York, New Haven & Hartford in New York City. In addition to these operations, the company handles, under long term contracts, the complete motor operations of several large manufacturers, importers and commercial distributors, all of which requires a fleet of more than 150 trucks, tractors and semi-trailers, which it maintains and operates itself.

During its 12 years of operation in the metropolitan territory, this company has built up an organization experienced in every phase of motor truck operations, including several men with railroad experience as well. Its main plant, located at 18 Amity street, Brooklyn, is designed to provide proper protection and permit economical handling of equipment, and to give its employees comfortable working facilities, essential for the standard of service required.

The Garage

The garage section of the plant, shown in an accompanying illustration, is planned to store or dispatch vehicles with a minimum amount of maneuvering, thus saving not only time but also the many petty damages that result from crowded quarters. The curb bumpers shown on each side force an orderly alignment of vehicles, provides a positive path for watchmen, to the rear of them, make checking easier, save steam radiators and water lines along the walls and avoid damage to walls or rear end of vehicles.

One garage man handles a garage of this size, storing

Drivers' Light Lunch Room

25 to 30 vehicles. He checks vehicle time in and out, guides them into position, supplies gasoline and oil, maintains gasoline and oil stock records, checks truck equip-

ments, such as tarpaulins, skids, ropes, lamps, etc., and in addition, keeps the garage clean.

All chauffeurs and helpers on vehicles are uniformed with jumpers bearing the company name. This is a saving for the men themselves and insures a means of their immediate identification at all points of pick-up and delivery. They are also given lockers and towel service in light, airy quarters, with ample washing facilities and showers and for their further convenience in the early morning, coffee and rolls are provided at cost. With these facilities, the company has been able to attract and hold the type of man who is capable of assuming the responsibilities necessary for their service.

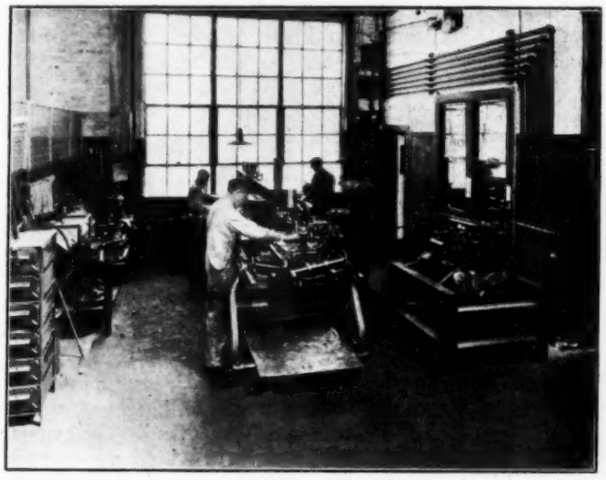
Shop Facilities

The company's shop is also located at the Brooklyn address. It is in charge of a competent engineer, with a broad experience in the automotive field. He is a member of the company's executive committee which meets weekly and thus has a voice in the formation of all company policies and a knowledge of its problems outside his immediate field.

Standardization of Chassis and Interchangeable Parts

The basis of the entire maintenance system is standardization of chassis with slight variations in body designs to meet special requirements of long term contract accounts. Chassis standardization, of course, permits the interchanging of its various mechanical units, such as motors, rear ends, transmissions, etc., and to further facilitate its maintenance service, this company carries a sufficient number of these spare units, constantly in repair, to permit immediate replacements, when necessary. With their shop facilities, this enables them to change many units while trucks are loaded, others over night, and the most complicated in 24 hours.

Its road service is also well developed. First of all, the men selected for this work are trained to one end—namely, to make quick repairs that will permit a safe delivery of cargo and permanent repairs after the service is completed. An example of this training is somewhat as follows: A 5-ton truck, with deliveries partially completed, was caught in a traffic jam and damage to following extent was sustained—radiator pushed back against motor, hood damaged and dash broken. The driver when reporting the accident stated that he would have to be towed in to the shop. The service man took off the hood, braced the dash, plugged broken tubes in the radiator and with a rope trussed it in the proper position, put on new hose connections and sent the driver on to complete his deliveries, which also meant that he was able to go back to the shop under his own power. The road service man also carries many smaller spare units as part of his regular equipment, such as magnetos,



When Motors Are Overhauled They Are Completely Torn Down and Rebuilt

Interior of Main Garage, Showing Ample Maneuvering Space and Curb

gas lines, ignition cable, spark plugs, etc., as an aid to speeding up service.

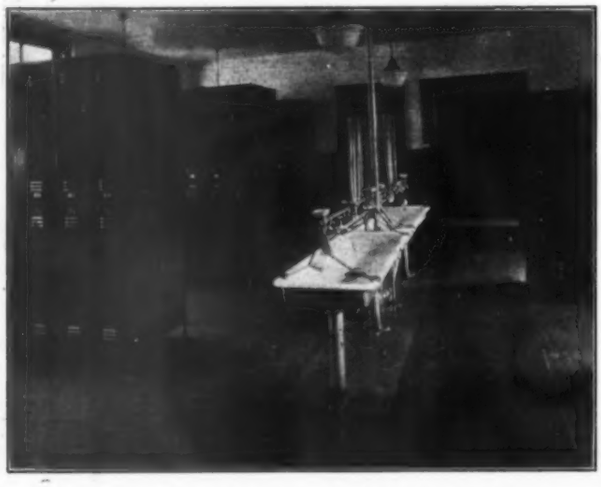
Trailer Maintenance

For its Long Island Railroad operations, in which equipment is dispatched on a scheduled basis, additional precautions are taken to insure regularity of service. Spare tractors and semi-trailers are held at the garage to replace units which may be disabled in service. The semi-trailers which remain in the field constantly (not being brought to the garage overnight) are inspected daily by a mechanic assigned specifically to this work. To cover the various L. C. L. delivery routes on which trucks are garaged in distant towns, a road service man was schooled in the operations so that he now is able to serve a double purpose.

Importance of Inspectors

In the regular maintenance program, the chief inspector, and his assistants are most important factors, as it is their duty to inspect all equipment at regular intervals and remedy the minor defects which would mean major repairs if allowed to continue. They handle the reports made by drivers of minor troubles, which are usually remedied by the night force, and it is also their inspection that determines when the truck shall be turned over to the shop foreman for replacement of any unit, or for a general overhaul of the chassis.

In order to make these operations as automatic as possible, to place responsibility for character of work and to provide a basis for judging abilities of inspectors, the entire fleet is subdivided into smaller groups. An inspector is definitely assigned to each group of trucks.



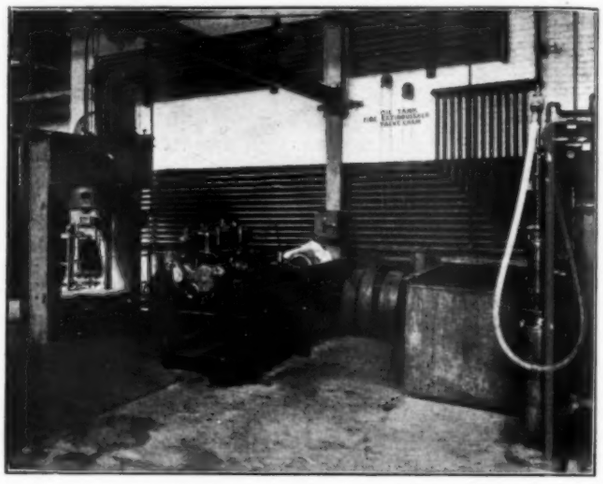
Locker and Wash Room for Drivers and Mechanics

They become his responsibility and their condition determines the man's value to the company.

Shop Layout

The shop is well lighted and well equipped. The arrangement is such that trucks undergoing major repairs can be placed at one side, thus keeping the floor space under the crane free for emergency work and free handling of heavy units. The overhauling of the spare units is handled by skilled men who are also required to check the installation of these units in the chassis. The motors are given particular attention, being subjected to a dynameter test and brought up to required horsepower before being installed in chassis. All vehicles are subjected to a road test by their inspector and must be finally checked by the chief inspector before being turned over to the operating department.

Throughout the entire system, the individual duties are so definitely outlined that even in emergencies, work becomes almost automatic and further, the responsibilities which determine a man's value can be definitely placed.



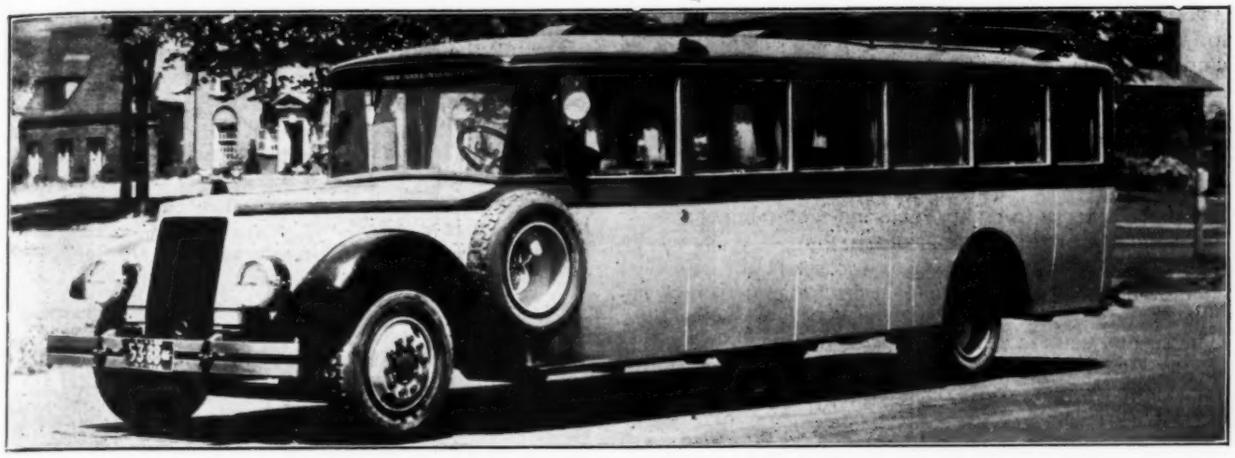
Tire Press and a Motor Stand

The company's maintenance policy has aided to a large degree its success in offering a dependable transportation service to its patrons.

WITH THE RETIREMENT of the Interstate Stage Lines, Inc., on the Boston to Manchester and Nashua, N. H., route, the Boston & Maine Transportation Company has inaugurated a frequent service combining with its own coaches and terminals those which the Interstate Lines have been using for the past two years. In all, there will be 12 trips a day on the route.

In establishing this schedule the Boston and Maine Transportation Company emphasizes the fact that "the element of competition with commuter-carrying trains which is involved in the operation of motor coaches on routes within 25 miles or so of Boston is not present on this run."

Arrival of Train, and Passengers Boarding Train-side Motor Coach at B. & O. Jersey City Terminal



The New Six-Cylinder 29-Passenger Mack Parlor Car Bus, on Exhibition at the A. E. R. A. Convention, Cleveland, Ohio

What the Motor Transport Investigation Has Shown*

Character and extent of bus and truck operations and effect on railways made clear

By Dr. C. S. Duncan, Association of Railway Executives

THE evidence presented to the commission tended to show that interstate commerce by motor bus and truck vehicles is absolutely and relatively small. The bulk of traffic, both of passengers and of property, is still intrastate.

The generally accepted estimate is that there were 75,000 motor buses in operation during 1925, with an average seating capacity of 15, offering about 33,000,000,000 passenger miles. Evidence submitted by representatives of steam carriers showed generally most substantial losses in passenger revenues which were attributed to motor vehicles. In certain localities the sales of local tickets have dropped by 50 per cent or more during the past few years. The evidence indicates, however, that a very large part of these losses, estimated at from 75 to 90 per cent, was due to private passenger automobiles rather than to the motor bus.

Some evidence was introduced to show losses in freight service attributable to motor trucks. One of these losses, however, a very large part, estimated at from 90 to 95 per cent, was due to motor trucks other than so-called common carriers.

Taxation

The question was frequently raised during the investigation as to how much motor trucks and motor buses paid through the medium of taxation, which is the only means for charging such operations for the use of the public highways. It appeared evident that taxation had greatly increased in the past three or four years, although at the beginning of the highway improvement program in 1917 there was no clear idea as to who should bear the burden for the construction and maintenance of the improved roads.

The types of taxation which will be found in many states include a license and registration fee for the vehicle and the driver, a gasoline tax of from two to five cents a gallon, a personal property tax, a federal excise tax and certain special municipal and county taxes.

The motor bus seating 18 to 31 persons under the varying systems of taxation would pay anywhere from $450 to an extreme of $1,500 a year, depending upon the rate of taxation and the size and type of the vehicle. The average, however, from most reliable figures, would probably be somewhat less than $450.

No satisfactory figures were offered as to the taxes paid by motor trucks. From the figures furnished by the government it appears that in 1925 the motor truck as a common carrier paid on the average about $381 as license fees and gasoline taxes and a private carrier motor truck paid about $169 on an average for license fees and gasoline taxes.

The gasoline tax applies to the motor vehicle whether run upon the public highway or upon steel rails.

The Highway Improvement Program

The development of the motor bus and truck operations has obviously been based upon the program of highway improvement, which has been a most striking phenomenon since 1917. There is no state in the Union which does not have today an ambitious highway improvement program, a substantial part of which has already been accomplished.

For the past five years about 40,000 miles of highway have been improved for the use of motor vehicles—a highway one and one-half times around the world—on an average each year. The total improved highway mileage now approaches 500,000 miles.

The expenditures for highway construction and

* From a report presented to the Executive Committee of the Association of Railway Executives.

maintenance have been running during the past three or four years at approximately $1,000,000,000 per year and this level of expenditures is showing no signs of decrease. With the increase in mileage of improved highways, the burden of maintenance grows heavier year by year.

The Motor Bus

Of the seventy to eighty thousand motor buses now in operation throughout the country there are, generally speaking, two classes. The first class is the so-called common carrier motor bus service, operated between fixed points over a fixed route on established schedules. The second class is a heterogeneous one including sightseeing buses, school buses, special excursion buses, buses chartered for parties, taxis, and others operated in irregular service.

The dominant type is group one, or the so-called common carrier motor bus service. To this group is attributed the 10 to 25 per cent of losses suffered by steam railroads in passenger revenues. Their equipment is being constantly improved, an increasing number of buses being in the de luxe class and with an average carrying capacity of about 15 persons. Some of the latest types of vehicles have smoking compartments, facilities for furnishing lunches, reclining chairs for night travel and equipment for carrying 50 pounds of baggage per passenger. When regulation is discussed, it is largely this type of motor bus service to which reference is made.

Motor Bus Operation Still Experimental

The average length of haul by the so-called common carrier motor bus is probably not over thirty miles. There are, however, numerous operations that extend to much greater distances.

Transportation by motor bus is not yet a seasoned activity. This is particularly true of the long haul. The entire motor bus operation, however, has not yet been tested through a sufficient period of time, covering periods of depression, to establish itself securely. Cost accounting among bus operators is still far from satisfactory and it is claimed that many fail to include all the operating costs in their accounts. The mortality appears from the evidence to be still high.

There was revealed, however, a tendency toward larger and more responsible organizations. The records showed a decrease in the number of operating companies and even in many cases the number of buses operated, while the number of units operated by individual companies increased and the total carrying capacity increased. The larger companies are becoming more financially stable and the service offered more dependable.

Through Passenger Service and Motor Bus Tickets

There was evidence offered of some little co-ordination in the matter of through travel covering motor bus service as a part of that through travel. In these cases, however, it was declared that the portion of the through tickets over the motor bus lines was either upon a separate ticket or in any case was charged in at the regular rates for the motor bus mileage.

The character of the tickets sold by motor bus operators in the conditions imposed thereon apparently show a desire to escape somewhat the responsibilities for dependable and adequate service which rest upon a common carrier in rail passenger service. These conditions restricted the liability of the motor bus operators.

Public Support of Motor Bus Operation

During the course of the investigation many instances were cited where the public has selected the motor bus as a means of travel between points already served by a steam or electric carrier, even though the service and the rates of the steam and electric carriers matched those of the motor bus. Where some superiority was shown by the steam or electric carriers in service and with lower rates it was still found in some instances that the public rode in the bus. No one was able to give a satisfactory explanation for this fact.

Whether the passenger traffic lost to the motor bus can be recovered by the steam and electric carriers to any substantial degree is an open question. On the other hand, it might appear in the course of time that travel by motor bus is a passing fancy on the part of the public. Certain carriers, however, have made strong efforts to regain traffic thus lost without success.

Regulation

The so-called common carrier bus operator favors regulation, both for intrastate and interstate operation. It was evident from the testimony given, however, that many of those who expressed a favorable attitude toward regulation had no clear understanding of what is meant by it.

The majority of those who offered testimony expressed the opinion that any regulatory law should be administered in so far as legally possible by the various state commissions, thus giving the state commissions the utmost regulatory power over interstate operation. Larger power for the Interstate Commerce Commission was urged by those whose experience with state commission regulation was unsatisfactory. The majority, however, seemed to feel that there should be an appeal to the Interstate Commerce Commission in any case.

Apprehension of Regulatory Requirements

There was much objection voiced to the requirement that existing transportation facilities should specifically be considered by the regulatory bodies before certificates were issued and to the requirement that the existing carriers should be given first opportunity to afford motor bus service. Basing their opposition upon what they claimed to be an essential difference between the two kinds of service offered the public, the motor bus operators generally held that consideration should be given in granting certificates only to existing motor bus operations and not to existing steam and electric operations.

The motor bus operators and their spokesmen claimed that they represent a new and unmatured infant industry which requires fostering and nourishing in order to obtain its proper growth and development. Certain bus operators seemed particularly fearful lest regulation should mean for them a limitation of earnings to a six per cent basis and they felt that such a new business would not develop on so low a return.

It appeared to be the general impression also that the existing regulation affecting steam and electric carriers is not suited to motor bus operation. It is probable that a part of this attitude at least was due to the general impression that such regulation has been restrictive and repressive.

It seems clear from the evidence offered that the motor bus industry itself will seek legislative action. They will do this in their own protection. They believe that their so-called common carrier business has reached

the stage where regulation is essential and can be successfully administered. They will seek, however, that type of regulation which they believe will give them the best protection from unfair competition and will permit them to develop their business with the least possible restraint.

The Motor Truck

Motor truck operations may be generally grouped into three classes:

(a) There are first the so-called common carrier truck operators, relatively few in number, who operate on regular schedules over regular routes between fixed termini and holding themselves out to furnish transportation for all kinds of freight on published tariffs.

(b) A much larger and more important group of motor truck operators is represented by the so-called contract carriers. It is this class of motor truck operators who dominate both intrastate and interstate motor truck operations. The difficulty connected with this type of motor truck operation is the vagueness and uncertainty connected with the definition of contract carrier.

(c) The third type of motor truck operator is the so-called owner operator. The most distinctive representative of this type is the manufacturing or distributing concern that owns and operates its own fleet of trucks.

Extent of Truck Operation

There are more than 2,250,000 motor trucks in operation today. It is estimated that of this number only about ten per cent hold themselves out as common carriers as defined above, and of these common carriers only about one per cent are engaged in interstate business; that is to say, about 2,500 trucks are now classed as common carriers in interstate commerce.

There are no figures available as to the amount of traffic originated, the total revenue truck miles, the total revenue ton miles represented by the operation of the 2,250,000 trucks. The investigation developed in a striking way, however, that truck operations of one kind or another are to be found in every part of the country wherever highways and traffic permit of such operation. However small relatively is the tonnage handled by the motor truck, it is a factor that permeates the entire web of commerce.

Truck Operations Not Yet Seasoned

Figures offered by the Bureau of Public Roads indicate that the average length of haul by motor truck decreased immediately following the year 1922 until about 80 per cent of the traffic moved 30 miles or less. Evidence developed in this investigation, however, showed a later tendency for such operations to increase in length. The economic soundness of such long operations has not yet been determined.

There is also keen competition in many fields of truck operation. This is particularly true where established volume of traffic tempts the operators into a field that he is not justified to enter. There are routes that are over-serviced. There is often competition without regulation where local rate wars develop and all operations become unprofitable. These are characteristics of an experimental and unstabilized industry.

More Stability in Truck Operation

Despite the characteristics indicated above there was evidence that truck operation is tending toward more stability. Hard experience has bred caution. There are more responsible operators now than formerly. The value of insurance as a protection against property damage and the breakdown of equipment is more clearly realized. The service is becoming more dependable and charges for service are trending toward stabilization. There are fewer "wildcatters" and "fly-by-nights" than formerly, some witnesses reporting an almost entire elimination of such irresponsible operators in their fields of operation.

Shippers likewise testified to the fact that from present operations they were receiving more satisfactory service than formerly, both as to regularity and responsibility. These improvements have largely come from the industry itself.

Shippers' Support of Motor Truck Operation

Shippers using motor truck service appeared before the Commission and declared that such service was essential to the welfare and prosperity of their business. They said that consignees demanded truck service on certain hauls regardless of whether the cost was higher or lower than shipment by rail. This demand from consignees for the use of the motor truck on short haul deliveries is increasing.

Larger shippers stood ready, it was declared, to use their own trucks if other types of truck service were not available. This would apply in many cases to transportation of raw materials to plants and the transportation of manufactured goods out of plants. It was pointed out, however, that such shippers were more limited than were other types of truck operations in seeking a return load.

The advantages of the motor truck claimed both by operators and shippers are:

a. Its flexibility,
b. Its speed,
c. The saving in expense of packing,
d. The saving in cost of re-handling,
e. The pick-up and store-door delivery service, and
f. The saving from lower inventories.

Competition from the Truck

There can be little doubt from the evidence given that a very considerable part of the motor truck operation today is supplementary to rail service. This is true of all operations that have taken the place of the horse-drawn truck or wagon in getting commodities to the freight station and in carrying commodities from the freight station. On the other hand, there can be as little doubt that the increase in the amount of the motor truck traffic over and above the original horse-drawn or wagon traffic and the increased range and speed of motor truck operation have made the motor truck more of a competitor with rail lines than the earlier operation.

There is another factor in this connection that demands consideration from the point of view of rail carriers, namely, the effect which motor truck operations are having upon rail lines in the matter of keeping terminals free from congestion, in the relief of rail lines from certain short haul less-than-carload operations that are said to be unremunerative and the aid which such motor truck operations have given in securing a general speeding up in the movement of commodities over rail lines.

Both the motor truck operators and the shippers by motor truck who testified before the Commission took the position that motor truck operations were not really competitive with those of the steam carriers, but that the motor truck operated in the field of the short haul

where the railroads claimed their traffic was not remunerative and served as extensions and supplementary service to the steam carriers, thus becoming feeders to the steam lines.

Motor truck operations are much more important in certain types of transportation than in others. What the motor truck is doing in the transportation of household furniture has frequently been commented upon. There were cited also a great many instances of motor truck operations in connection with the carrying of milk, garden truck and farm produce. Special types of truck bodies have been constructed adapted to the carrying of commodities requiring refrigeration and other traffic calling for special equipment. It would appear that the tendency is to duplicate in the automobile units at least to some extent such equipment as can take the place of freight cars constructed for specialized service.

All of these various factors point clearly to the important question of co-ordinating motor truck operations with rail operations. No one made any claim, as has been said, that motor trucks can now supplant rail lines as the essential and fundamental transportation facilities upon which the movement of the country's traffic must go. On the other hand, a real and immediate problem arises with regard to certain short haul and branch line railroads. Truck operations may now be threatening the very existence of such rail lines. Both operations may not be essential to the communities which they serve. Certainly it is a question for those communities to determine which type of transportation they will have.

Tariffs

The actual charges quoted by motor truck operators showed that generally the motor truck charges were somewhere between the steam freight charge and the express rate, being somewhat greater than the rail charge and somewhat less than the express rate. On certain standard operations there appeared to be a tendency to make a flat charge of $1 per hundred pounds, with special rates on one or two classes of commodities. In general, also, the classification of commodities into tariffs has not gone far in motor truck operation. The classifications that do exist, while sometimes approximating do not coincide with the steam carrier classifications of freight.

The quoted tariffs in certain cases include the pick-up and delivery service. In other instances a separate charge is made for each of these services. It seemed to be the common practice that, where the pick-up and delivery charges were separated, the straightaway haul would be about the same as the steam carrier's charge.

The evidence indicated also that it was the steam carrier's charge which was used by the truck operators generally as the basis for their own charge. These operators had not attempted any adjustment of rates on what might be called a scientific basis, nor had they been adjusted with reference to ascertainable costs.

Bills of Lading

In most cases it appears that motor truck operators issue bills of lading to shippers. Sometimes these are the same as the railroads use. Much more often, however, they are simply receipts of shipments and stipulate no particular responsibility upon the carriers.

Loss and Damage Claims

Only one or two witnesses indicated any difficulty in the matter of losses or damage to goods shipped or of collecting for such losses and damages. No shippers offered any recent complaints in this regard. It was pointed out, however, that the situation with respect to loss and damage had very greatly improved within the past few years. This improvement had kept step with the improvement in financial responsibility of operators and with the tendency toward larger and more responsible operating organizations.

Regulation of Truck Operations

The attitude toward regulation taken both by the motor truck operators and the shippers who used their service was practically the same. It was a position widely different from that expressed by motor bus operators and their representatives. In general, this attitude is one of strong opposition to any form of regulation at this time, but was modified in accordance with the different types of motor truck operation.

The so-called common carrier operators presented practically the same attitude toward regulation as that held by motor bus operators. They desire such regulation as will furnish protection to their operations. This group, however, does not constitute more than ten per cent of the total motor truck operations.

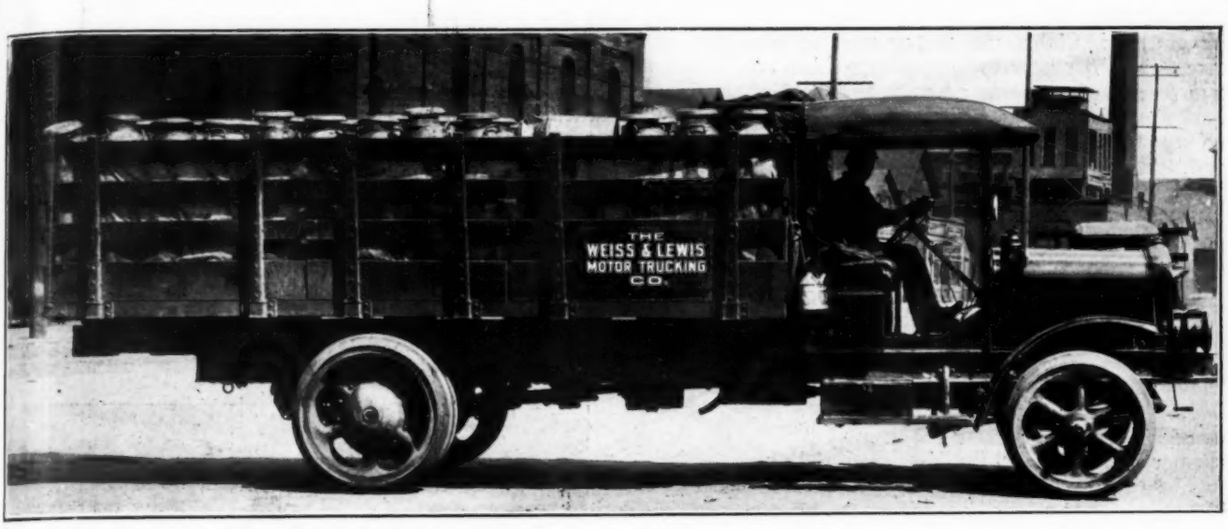
The much larger and more important group of motor truck operators represented by the so-called contract carriers is aggressively opposed to any kind of regulation at this time and claims that in any case its operations can not legally be regulated.

The owner operator as represented by witnesses before the Commission claimed that for themselves there could be no regulation, either by the state or by the federal government, since their trucks are merely a part of their general equipment used for carrying on their business.

There was, however, no demand apparent, either from the operators or from the shippers as representing the public, for regulation. No complaints were brought by the shippers against these motor truck operators, but, on the contrary, the shippers who appeared claimed that such truck operators offered essential transportation service to their business and asked that motor truck service be permitted to develop without any restrictive or repressive regulation.

It is worth noting that farm organizations appeared through representatives at various hearings and almost universally testified, first, to the importance of the truck to the farmer and particularly to the co-operative association, and, second, to the effect that if any regulatory law was enacted, whether by the states or by the federal government, their operations as a class should be specifically exempted from such regulation. Only two witnesses, one for a local organization and one appearing in his own behalf, testified in favor of regulation and especially such regulation as would protect the highways from truck operations which had destroyed these highways for which farm property had been taxed.

FEDERAL REGULATION of motor buses carrying passengers in interstate commerce was urged upon the Interstate Commerce Commission in briefs filed by railroads transporting commuters in and out of New York. In a brief filed in behalf of the Erie and its subsidiaries the statement was made that they carried 40,000 persons into New York City every morning and out every night, and that it would be impossible for the motor bus lines adequately to accommodate this traffic. The brief declared that bus lines engaged in interstate commerce were rapidly multiplying in thickly settled communities in Northern New Jersey, where the service afforded by established lines of steam railroads was held to be entirely adequate. It was contended that the effect of this competition was to take from the railroad its most profitable traffic.



Milk is Regularly Transported by Truck in Indiana

What Trucks Are Doing in Indiana*

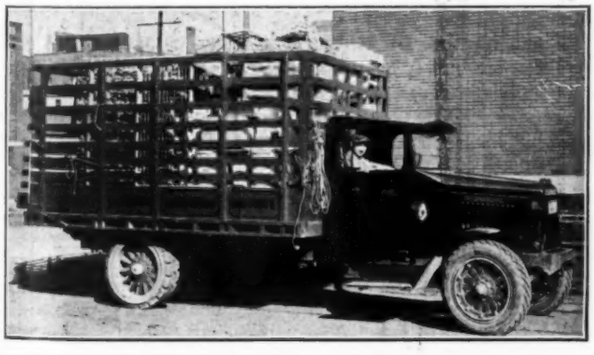
An analysis of the kinds of highway freight carriers and the business they do

By Tom Snyder

Secretary, Indiana Transfer and Warehousemen's Association Indianapolis, Ind.

TRUCK transportation has become so fixed as a transportation service in 'Indiana that it can easily and definitely be separated into five classes and each class analyzed in its relation to industry at large and in its relation to other methods of transportation as follows:

Class 1. Truck operators transporting freight at regular or irregular intervals to any destination within the limit of their operations designated by the shipper at rates specially agreed upon or fixed by contract.



Household Goods Are Frequently Shipped by Truck

Class 2. Truck operators specializing in livestock hauling from farms to packing or rail shipping centers serving when and where demanded and at irregular or special rates; also soliciting all kinds of freight as a return load to the territory from which they come at irregular or special rates, generally ignoring official classification in which such freight moves by rail.

Class 3: Operators specializing in the transportation of milk from farms or territory cooling stations to cities, condensaries or manufacturers or dairy products over fixed routes on fixed schedules at irregular rates; and who solicit freight of any kind for transportation as a return load at special or irregular rates, usually ignoring the official classification at which such freight moves by rail.

Class 4: Truck operators transporting freight on regular schedules over fixed routes between fixed termini at fixed classifications and rates and holding certificates of convenience and necessity issued by the Indiana Public Service Commission, and complying with the rules and regulations of the commission.

Class 5: Truck operators transporting freight on regular schedules over fixed routes between fixed termini at irregular or special rates, ignoring official classification under which such freight moves, and ignoring rules and regulations of the Public Service Commission of Indiana.

Contract Haulers

Truck operators coming under the first classification generally consider themselves contract haulers not subject to the Indiana motor truck regulation law, and are definitely opposed to any form of regulation. A survey at Indianapolis, the capital of the state, however, shows that this class of haulers is transporting approximately 220 tons of freight per week from Indianapolis to outlying territory and on return trips is transporting into Indianapolis approximately 95 tons per week, and that much of the freight transported is of the class solicited by regular route operators.

Under Class 2 no other single agency has contributed more to the agricultural development of Indiana than the

*From testimony of Mr. Snyder before the I. C. C. Motor Transport Investigation at Chicago.

motor truck in its service in transporting hogs and cattle direct from the farm to the packing plant, and its advantage as a transportation agent in this field of service can be best illustrated by the following table showing the volume to which it has developed between the years 1919 and 1926:

LIVE STOCK SHIPPED TO UNION STOCK YARDS, INDIANAPOLIS, IND., BY MOTOR TRUCK

Year	Hogs	Cattle	Calves	Sheep
1919	711,212	47,730	62,997	58,658
1920	791,988	48,158	77,275	58,698
1921	808,595	45,102	75,707	68,201
1922	734,280	51,711	74,657	62,818
1923	934,960	47,662	79,897	57,052
1924	922,904	51,517	80,650	54,848
1925	768,628	60,836	89,802	67,386

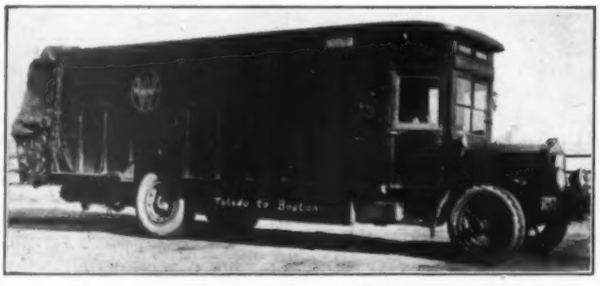
It is interesting to note that because of the large number of operators who have entered into this field, keen competition has reduced the transportation fee to the farmer more than 50 per cent over the above period.

The rates to the farmer for the transportation of his hogs and cattle to the packing plants have been reduced because of a rapidly developing practice of hauling return loads of merchandise, agricultural machinery, fertilizer, cement and building material, from the industrial centers to the small towns along the routes of these operators. This volume has grown until approximately 180 tons is being transported weekly from the city of Indianapolis to outlying territory on the returning stock trucks.

Considerable opposition to this class of haulers because of their soliciting return loads and their ability to secure such loads because of the very low rates charged, has developed among regular Class 4 route operators throughout the state, and a feeling is developing that the stock hauler in his solicitation of return loads of general freight has placed himself in the common carrier class and should be subject to regulation.

Trucks Handle Most Milk

Under Class 3 the transportation of milk has become almost entirely a motor truck haul in Indiana. The advantages of the motor truck in transporting milk cannot be met by any other method of transportation. These



The Success of Long Distance Trucking Depends on Securing a Return Load

advantages lie in the fact that the motor truck, in most cases, picks the milk up at the farmer's cooling station, thereby preventing it from being exposed to the sun while on the platform of rail terminals; while it also relieves the farmer of the task of delivering it to rail terminals. Wet blankets and tarpaulins are easily applied as a cover over the load, thus holding it at low temperature. The practice of rendering a service direct from farm cooling stations to the distributor's cooling station saves two platform clears which is of great value in protection and time.

Competition in this field has become very keen throughout the state and the cost of the service in many instances is below that of the former rail service for the same length of haul. This class of operators is also disturbing the established regular Class 4 motor truck routes by soliciting return loads from industrial centers to the rural communities, and transporting regular merchandise at lower rates than the established regular truck line operators and often below the existing rail carrier rates.

The milk haulers, generally, collect their transportation service fee from the milk distributor, condenser, or dairy product manufacturer and are, therefore, considered in the contract hauler class; however, the tendency to solicit general merchandise as a return load has raised

Nearly a Million Head of Cattle Were Trucked into Indianapolis in 1925

a question among regular freight route operators developing the theory that milk haulers should be considered in the common carrier class and should be subject to commission direction and regulation.

Common Carrier Trucks the Important Class

Class 4 in motor truck transportation service in Indiana no doubt becomes the most definite, and I believe the most important class, because the fixed schedule service rendered has made possible a more definite and comprehensive analysis, especially in the larger possibilities, of truck operations and the definite cost of such operations.

For a number of years this class of operators has recognized themselves as common carriers. When the motor truck regulation law was enacted in Indiana in February, 1925, 250 truck operators filed applications for certificates of convenience and necessity with the Indiana Public Service Commission, and those who were granted certificates attempted conscientiously to comply with all the rules and regulations of the commission, feeling that regulation would establish a higher standard in motor truck service and assist the operators to establish standard rates and thereby make the operation of motor trucks more profitable.

Certificate Holders Unprotected

This point of view has changed considerably, however, during the past year, due to the fact that compliance with the rules and regulations of the Indiana Public Service Commission added approximately $300 per year to the cost of operating each truck, and inasmuch as the county prosecuting attorneys of the state have not interpreted the law as granting any protection to the certificate holders, there was little advantage, if any, in holding certificates. As a result when the first year ended more than 20 per cent of the certificate holders failed to renew them.

In the Indianapolis field 15 certificated operators are now handling 325 tons of freight weekly to outlying territory and 420 tons weekly from such outlying territories into Indianapolis. This service generally includes a free pickup at the shipper's platform and a free store-door delivery service to the consignee.

Rail Competition

It is interesting to note that 97 per cent of all certificated operations in the Indianapolis territory are in direct competition with either electric or steam rail service and that 92 per cent are in direct competition with both electric and steam rail service. The rates adopted by this group are generally the same as those charged by steam and electric lines and are based upon the official classification.

The Truck Terminal Association of Indianapolis, Ind., has made an exception to the extent of placing freight coming under Classification Rule 25 in second class, and freight coming under Classification Rule 26 in third class, and quoting third class as the minimum rate on lower classification freight.

There has been no protest against this method of charge for service upon the part of the shippers or consignees, due no doubt to the advantages of free pickup and store-door delivery service.

"Gyp" Truckers Troublesome

The real concern of this class of operators is the fact that Class 5 operators are running over the same routes, quoting lower rates for service, operating on lower service standards, and providing the shipper or consignee with no protection for the cargo. Class 4 operators favor interstate and intrastate commission regulation, and are convinced that only through such regulation can service standards be maintained, rates established and conditions created whereby this class of operators can assure themselves a profit for their service. Class 4 operators are also agreed that general motor truck terminals in all industrial centers are economically essential to properly established motor truck transportation.

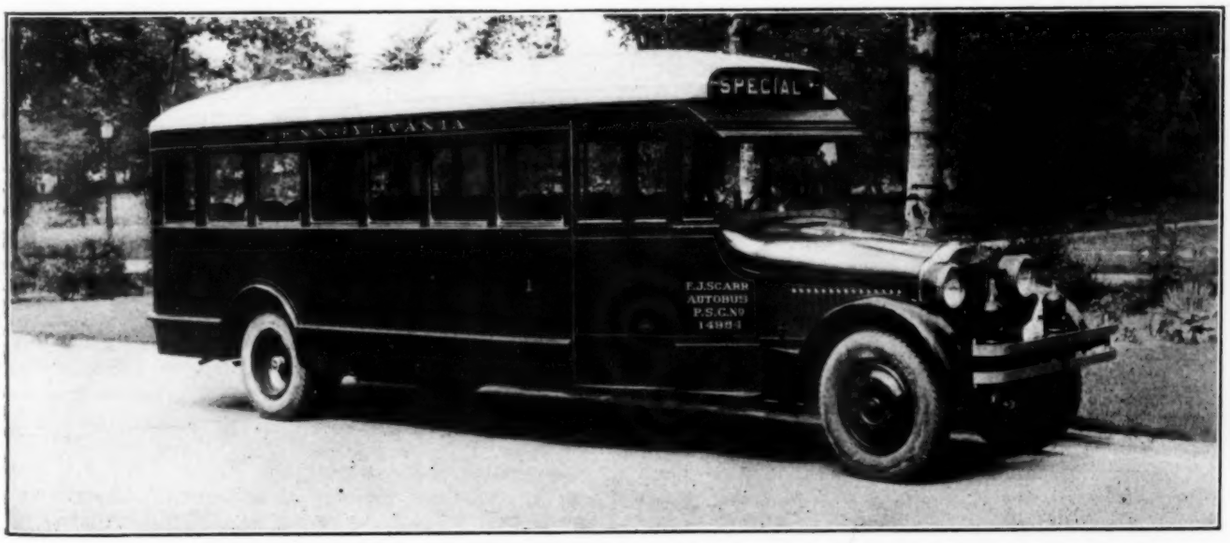
Indiana is primarily a motor truck transportation state, due to the fact that its population is pretty evenly distributed throughout the state, and that industrial centers are located from 25 to 50 miles apart, providing not only an ideal motor truck haul, but through a system of truck terminals, extending the field of service through terminal transfers, the development of which it is agreed by all operators in Class 4 would be made more permanent and brought about more rapidly under a system of constructive motor truck regulation.

Class 5 is made up of the so-called "gyp" operators utilizing generally small trucks, failing to recognize the need of any responsibility other than rendering the best service within their ability, at whatever rate they are fortunate enough to work out of their service.

Small Trucks Unsuccessful Over 25 Miles

Many of these operators do render a splendid service and maintain a pretty definite schedule and because of their willingness to haul for less than the established rates, are able to get considerable business, oftentimes at the expense of the regular certificated hauler or other transportation agencies. However, records covering a period of 10 years show that adventures beyond the 25-mile point with trucks of 1 or 1½ tons capacity operating at the regular carrier rates or less have generally failed within 18 months.

THE COLORADO COMMISSION granted a certificate for a motor truck freight line between Denver and Fort Collins and intermediate points where the applicant gave an expeditious store door delivery which one of the witnesses for a protesting railroad testified the railroad could not give because of the expense. The Idaho Commission granted the application of the Utah Idaho Central (electric railway) for a certificate for an auto passenger and express line from Logan, Utah, to Preston, Idaho, and denied the application of an individual to operate over the same route, chiefly because the railway's bus service would be co-ordinated with its rail service, which would supplant the bus service in winter, when the latter would be less desired and more or less hazardous, and the railway had made a large investment for the rail service of the territory and was operating at a loss.



The First Pennsylvania Bus, a White, in Service Between Chambersburg, Pa., and Piney Mountain Inn

New Equipment

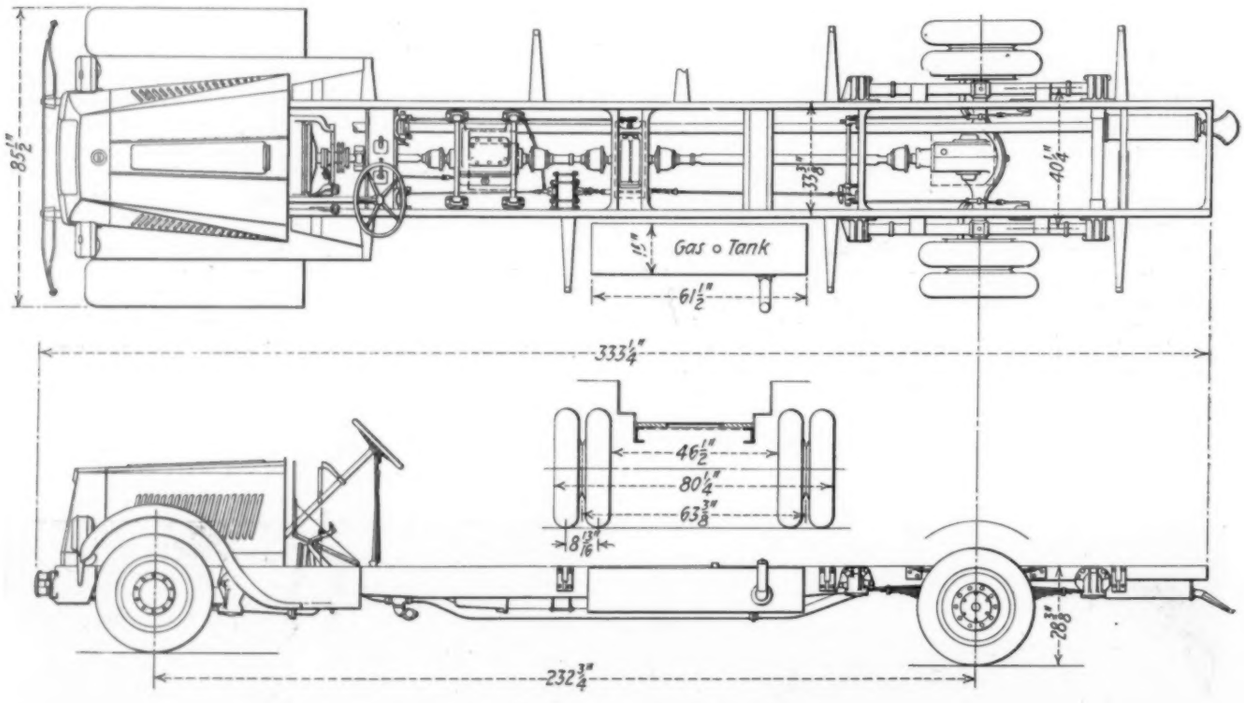
Six-cylinder Mack Engine on Rubber Shock Insulators

THE important feature of the six-cylinder bus manufactured by Mack Trucks, Inc., New York, is that the A L model engine, transmission, gasoline tank and spring shackles are mounted in rubber shock insulators. The cross members of the chassis frame supporting the engine and transmission are supported from drop-forged steel beams, the ends of which are suspended in blocks of live rubber under compression in housings which are attached to the frame. The method of insulating the engine and transmission is similar to that used in supporting the eight spring tips. A further extension of the shock insulator principle embodied in the driving line between the single-plate, dry-disk clutch and the amidships transmission, is that of the Mack torque insulator. This device acts as a universal joint and also as a flexible coupling whereby the torque vibration and the shock sustained by the driving line due to the clutch action, gear shifting and road inequalities are absorbed and damped out by four revolving cushions of live rubber.

The transmission, especially developed for this chassis, affords four speeds forward. The ratios are proportioned to harmonize with the characteristics of the engine on the one hand and those of the chassis on the other. While conventional in gear arrangement and single control lever, it embodies several distinctive features. In common with Mack transmissions, the reverse latch is controlled without any catch or button. Depression of the entire lever unlocks the reverse gate which latches automatically when coming out of reverse. Another feature is the connection between the gearshift lever and the transmission. A single rod replaces the three-rod arrangement ordinarily employed in four-speed amidship boxes. The gears are liberal in face width and are so proportioned that tooth speeds are slow, thus facilitating easy shifting. The sliding gears are mounted on the Mack interrupted spline shaft.

The smoothness and freedom from vibration which characterizes the engine arises to considerable extent from the exceptionally stiff, counter-balanced crankshaft mounted on four main bearings of exceptional size. These bearings are 3½ in. in diameter and 10½ in. in total length. The crankshaft has case-hardened journals with a tough core to resist shock and vibration. The connecting rods are of tubular construction, machined from solid, drop-forgings. The pistons are magnesium-aluminum alloy, incorporating the constant clearance principle. Owing to a splined skirt and inserts of a material possessing a low coefficient of expansion, the pistons expand at the same rate as the cylinders, thus maintaining constant clearance.

The cylinders are cast in block with the removable heads cast in pairs, insuring against distortion of the cylinder heads. Another feature of the cylinder heads is that their combustion chambers are offset toward the



Plan and Elevation of the Mack 6-Cylinder Bus

valves, serving to permit turbulence and accelerating flame propagation. The valves are situated in the conventional L-head arrangement, actuated by roller-type valve lifters from the four-bearing camshaft driven by case-hardened steel timing gears. The complete timing drive involves only three gears, the third being a bronze gear set transversely to the driving shaft at the front of the engine from the opposite ends of which the water pump and the magneto are driven. Force feed and splash lubrication is employed, together with a special oil filter.

Both manifolds are of welded pressed steel. The intake manifold is integral with an automatic compensating vaporizer. The engine is supported at the rear by a drop-forged steel beam through-bolted to the rear main bearing, thus relieving the aluminum crank case from twisting strains.

Gasoline is fed by an electric pump from the 50-gal. tank slung alongside the frame at the left of the chassis and is mounted on Mack rubber shock insulators, thus cushioning it against both shock and vibration, the principal causes of tank and feed line leakage. Exhaustive road tests have determined that the gasoline consumption averages seven miles to the gallon. Oil consumption in the same tests averaged 320 miles to the gallon.

The bus is being built in two models, the 29-passenger parlor car and 29-passenger city type. The latter is also obtainable with gas-electric drive, the same as in the AB model city type bus. The only difference between the parlor and city type models is an additional 8 in. in the over-all length of the parlor car, making it 341 in.

The six-cylinder engine has a 4¼-in. bore by 5-in. stroke. Its N.A.C.C. rating is 43.35 hp. and its b. hp. rating at 2,200 r.p.m. is 97 hp. The Robert Bosch magneto, Stromberg carburetor and Mack single plate, dry disc clutch, are used.

The rear axle is of the Mack duel reduction, drop-forged, chrome nickel, banjo type, with a special bus aluminum gear carrier. The bevel pinion and spur pinion shafts rotate in ball bearings. The front axle is of the special Lemoine type with a live spindle.

The foot brakes for the rear wheels are of the internal type, fabric against steel. The 18-in. by 5-in. drums have 365 sq. in. of braking surface. They are actuated by a vacuum booster brake. The hand brakes are of the contracting type acting on the drive shaft back of the transmission, fabric against steel. The 11-in. by 6-in. brake drums have a braking surface of 144 sq. in. The drums are supported by two cross members on the frame. The balanced drum runs between ball bearings and universals.

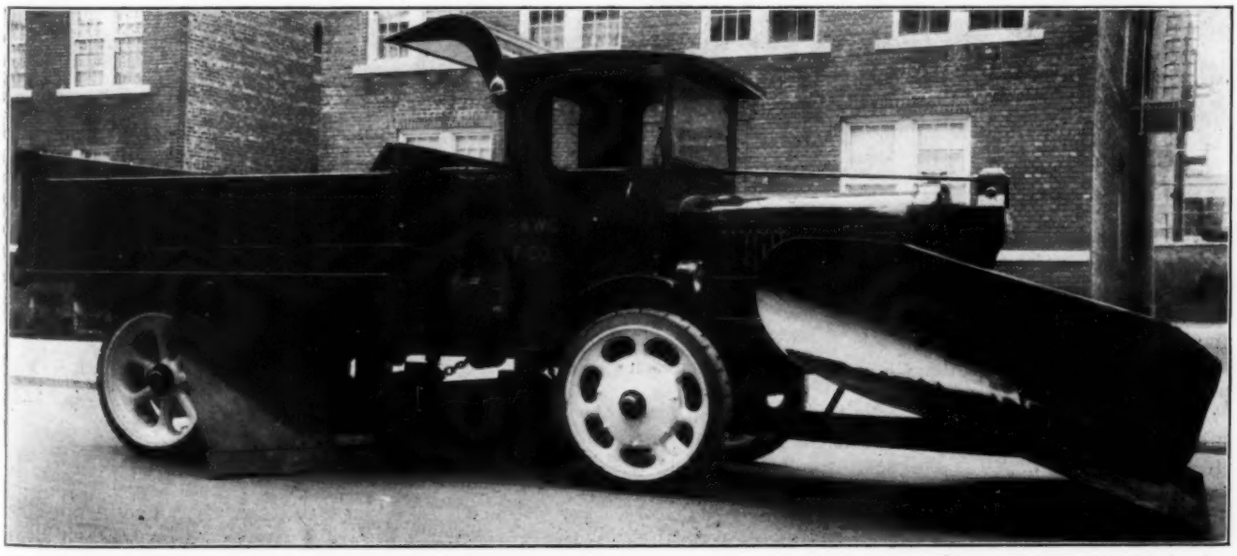
The rigid frame is made of pressed chrome-nickel steel, heat treated, tapering depth from the middle to the ends. Tubular torsional stiffening members are used at the rear springs. The chassis has an over-all length of 333 in., a wheel base of 232 in. and weighs 8,950 lb.

Four-Wheel Drive Snow Plow

A SPECIALLY designed tractor-truck snow plow with a positive drive to all four wheels, made possible by means of automatic lock differentials, has been developed by the Walter Motor Truck Company, Inc., Queens Boulevard, Long Island City, New York. The suspended front axle drive is of the double reduction type. The first reduction is by bevel gears and the second by internal gears in the wheels. The bevel gears, differential and service brakes form a unit which is mounted and suspended in the frame instead of being mounted on or in the axle. The power is transmitted from each side of the differential through double universal shafts to the wheel drive pinions. The rear axle is similar in construction so that all of these parts are interchangeable, front and rear and on either side. Lubrication and dirt protection are obtained by complete enclosure.

The six-cylinder motor with a 4-in. bore and 5¾-in. stroke, develops 80 hp. and has an S.A.E. rating of 38.4 hp. It develops a torque of 3,100 lb. at the low speed of 600 r.p.m. The motor is provided with a removable Recardo head which is claimed to eliminate detonation or knocking and to develop high horsepower in relation to the amount of fuel used.

Maximum traction is obtained by positively driving all four wheels through automatic lock differentials. This device is a patented worm and worm gear combination of strength and simplicity. The basic principle is the same as used in irreversible worm steering gears. It will give the desired locking action and still allow



The Walters Tractor-Truck Has a Positive Drive to Each of the Four Wheels Through the Automatic Lock Differentials

for the free differential speed action of the wheels necessary on turns. This differential distributes the power to the wheels in proportion to their traction or pushing ability, and the tractor can only be stalled by slipping all four wheels at the same time.

The transmission is of the special tractor type with five forward speeds which give a 10 to 1 range of power and speed. Over 11,000 lb. tractive force is developed in low gear. The truck will develop 25 m.p.h. in high gear.

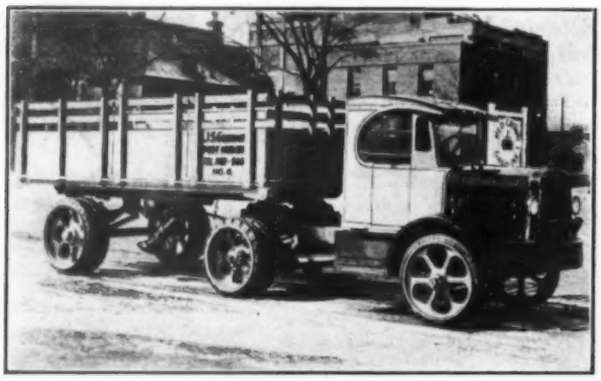
The front plow is of the reversible patrol type which lifts the snow on an enclosed platform and throws it well off the road. The mold board can be set to either side to take advantage of the wind or other conditions. It clears a space of 9 ft. wide with one pass.

The center scraper blade is spring mounted in all directions and is designed to remove all of the packed snow and ice from the road surface. The blade is 12 ft. long by 18 in. high and is provided with wing tips for directing the snow.

G. M. C. 10-and-15-Ton Tractor Trucks

THE General Motors Truck Company, Pontiac, Mich., has developed a 10-ton and a 15-ton tractor truck, the front axles of each of which have been moved back under the motor, shortening the wheel base, making for a very small turning radius, and permitting the vehicle to be maneuvered in congested places such as railroad terminals.

A two-range transmission has been provided which has made a reduction in the lower gear ratios that the tractors can start their loads easily and slowly without undue strain on the chassis. The front springs are especially designed for flexibility and easy riding, while



The Wheel Base of the G. M. C. Tractor Truck Has Been Shortened by Moving the Front Axle Back Under the Motor

the rear springs are of the double progressive type in order to obtain easy driving when running light as well as when under load conditions.

By the use of 36-in. wheels and the adoption of some other changes, the distance from the ground to the top of the frame is brought down to the lowest possible point. This keeps the front end of the trailer low and at the same time allows the tractor wheels to cut under. It also makes possible the use of any automatic fifth wheel now on the market.

In both the 10-ton and 15-ton models, the distance back of the cab to the center line of the rear axle has been standardized at 54 in. This permits the placing of the center of the fifth wheel three inches in front of the center line of the rear axle, while allowing the turning of an eight-foot body at right angles to the tractor, with ample clearance at the corner of the body.

International Harvester 15-Passenger Coach

A 15-PASSENGER parlor coach is now obtainable from the International Harvester Company of America, Inc., 606 South Michigan avenue, Chicago. It may be equipped with either a four-cylinder or a six-cylinder engine. With a four-cylinder engine,

Model S C L Fifteen-Passenger Coach of the International Harvester Company of America, Inc.

it is designated as the SLC 34 and with six-cylinder engine, as the SLC 36.

The principal object in designing the SLC coach was to produce a vehicle of moderate size having all the characteristics to be expected from a modern coach of

The Chairs Are Provided with Combination Air and Spiral Spring Cushions

any size, such as a long-lived chassis; smooth, noiseless operation; low center of gravity; minimum height of the coach floor from the ground; comfortable wicker chairs; roomy seat spacing; luxurious appearance and

appointments; unobstructed vision, and an attractive interior.

The four-cylinder engine is of 3¼-in. bore and 5-in. stroke and is provided with five main bearings, while the six-cylinder engine is of 3¼ in. bore and 4½ in. stroke and has four main bearings. The crankshafts of both engines are unusually large. The volume and pressure of the oil pumped to the six-cylinder engine are directly controlled by the degree of throttle advance, independent of the engine speed. Both types of engine are mounted as a unit with the transmission and a banjo cross member is utilized to support both the engine and transmission. A heavy-duty bevel drive axle is used on both models. The front axle is the reversed Elliot type of coach axle.

The body is of composite wood and steel construction, and includes all current coach appointments. A sedan body of 18-passenger capacity is also available for use with this chassis.

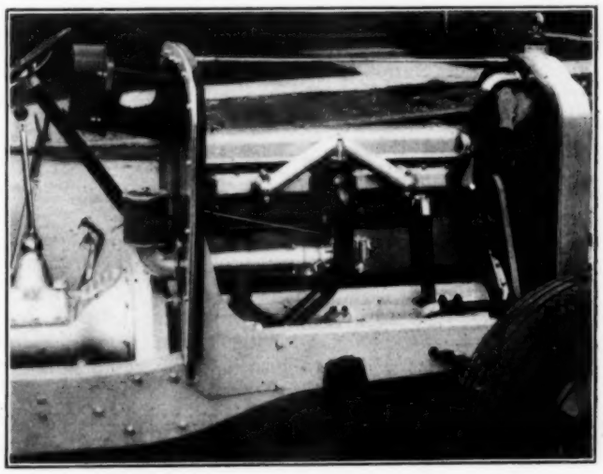
Double wicker type chairs are placed on the left side of the coach and single chairs on the right, thus providing a roomy aisle. The chairs, of fiber with leather upholstering, are provided with combination air and spiral spring cushions which are 37 in. wide in the double chairs and 18 in. wide in the single chairs.

White Announces Six-Cylinder Bus

ONE of the especially interesting exhibits at the recent A. E. R. A. convention in Cleveland was a new six-cylinder bus chassis exhibited by the White Company, Cleveland, Ohio. This new bus, known as the Model 54, featuring a 100-hp. over-head valve type engine, with seven bearing crank shaft; four-wheel metal to metal Westinghouse air brakes and two-stage spring equipment, constitutes the addition of an entirely new model to the line of buses and trucks manufactured by this company.

As in the case of the other White bus models, the White six is being built only as a single deck bus. It has a wheel base of 227 in. and carries from 18 to 23 passengers in a de luxe model with a baggage compartment for interurban service and from 25 to 29 passengers in a pay-enter model without baggage compartment for city service.

The power plant is built as a unit embodying the engine, clutch and transmission. The engine has six cylinders cast in one block with 4⅜-in. bore by 5¾-in. stroke. The valves are of the over-head type. The cylinder head is removable. All of the valves are contained in the head and the arrangements of valve rockers, etc., is such that the head may be removed as a unit and replaced. The crank-shaft is supported on seven



Right Side of White Six-Cylinder Engine, Showing Inlet Manifold with Heated Carburetor Riser, Air Cleaner and Water Pump Connection

main bearings and is balanced statically and dynamically. A gear pump located in the crank case sump forces lubricating oil under pressure to the crank shaft, cam shaft, connecting rod and piston pin bearings and to the air compressor. The cooling system consists of a radiator with a cast aluminum shell having removable core mounted flexibly on the chassis. The water circulation through the cylinder jackets and cylinder head is effected by means of a positive drive centrifugal pump.

A vacuum gasoline feed system supplies fuel to the engine from a 46-gal. tank which is mounted in a special cradle on the frame. The inlet manifold is provided with a heated carbureter riser. The exhaust outlets of

The New White Model 54 Six-Cylinder Bus

the motor are arranged in groups of three with separate manifolds which lead into a common exhaust pipe to the muffler. In the exhaust manifold is a valve with dash control which permits all or part of the exhaust gases to be sent back through the cylinder block to the carburetor riser. This arrangement facilitates the warming up of the motor after starting in cold weather.

To assure uninterrupted motor operation with an absence of detonation two spark plugs are provided for each cylinder. Battery ignition with automatic and hand control of spark advance is provided.

The clutch is a two-plate dry disc type and the transmission is of the four-speed forward and one reverse selective type. The driveshaft is tubular with three metal universal joints. The main chassis frame is of heat treated pressed steel of deep channel section having a depth of 9⅞ in. and a maximum flange width of 3½ in. The thickness is 3/16 in. The front axle is drop-forged of the Elliott semi-center point steering type. Steel disc wheels mounted on Timken tapered roller bearings are standard equipment. The rear axle is of the semi-floating single reduction type with Timken tapered roller wheel bearings. Westinghouse air brakes operating metal brake shoes against metal brake drums on all four wheels provide the service brake equipment while, for emergency service a single drum hand-operated brake is provided on the driveshaft.

The spring equipment on the front axle is composed of semi-elliptic springs 48 in. long and 3 in. wide. On the rear axle are two-stage semi-elliptic springs 64 in. long and 4 in. wide. The standard tire equipment consists of 38-in. by 9-in. balloon tires on the front and the rear dual wheels. The electrical system is of the two-unit 12-volt type with the Leece Neville generator voltage regulation system. Starting and lighting equipment employs the single wire system. The generator is of 30 amperes capacity with a storage battery having 112 amp. hr. capacity at a 20-ampere rate.

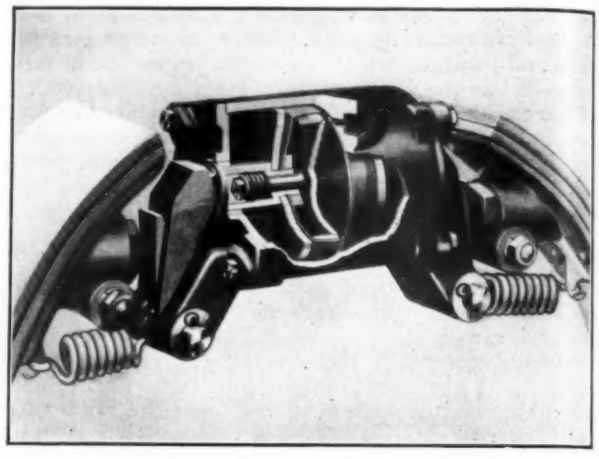
The wheel base of the standard chassis is 227 in. with a total over-all chassis length, including bumpers, of 335⅜ in. The distance from the dash to the center line of the rear axle is 185 in., and the distance from the dash to the extreme ends of the frame side rails is 259 in. The total width of the chassis over the tires, with balloon tires, is 84 in. at the front and 88½ in. at the rear wheels. The turning radius is 36 ft.

Sealtite Pistons for Brake Cylinders

THE Sealtite piston for brake cylinders was developed by the Christensen Air Brake Company, 6513 Cedar Avenue, Cleveland, Ohio, on account of the compartively short life of the other piston packings or "cups" which this company had been using.

The Sealtite piston is all metal and gives a perfect seal. It is practically wear-proof and is unaffected by the oil vapor which comes over in the air line. So satisfactory is its life in the service that the manufacturer is guaranteeing its operation for the life of the vehicle on which its cylinders and Sealtite pistons are installed.

The piston consists essentially of a thin, flexible alloy cup. Inside of the cup is an expander ring with a ball seat on its inner circumference. The face of the piston is a valve plate which seats on the expander ring. It is held in position by a coil spring and nut. The coil spring exerts sufficient pressure to keep the face plate firmly seated and the metal cap expanded against the cylinder wall. When air is admitted to the cylinder the pressure, which it exerts on the face plate of the piston, causes it to seat more firmly against the cylinder wall.

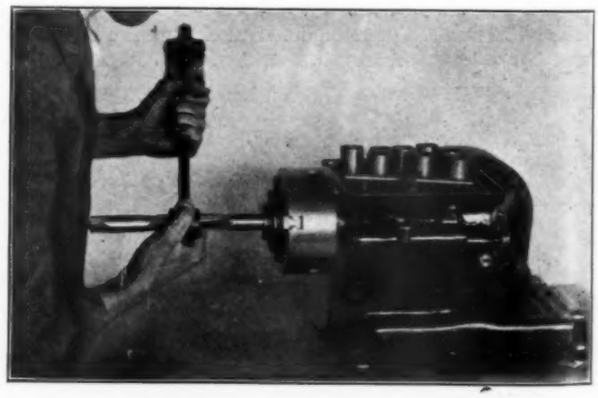


Christensen Brake Cylinder Cut Away to Show the Sealtite All Metal Piston Installation

In other words, the tighter the pressure the tighter the seal. To give rigidity to the complete piston assembly a strong steel follower plate is fastened behind the cup.

Van Norman Power Reamer

THE Van Norman Machine Tool Company, Springfield, Mass., has developed a bench type power-driven reaming machine. It is a compact motor-driven unit, especially adapted to reaming piston and connecting rod bearings in bus and truck repair shops. It is driven by a Westinghouse motor, turning at a predetermined speed of 30 r.p.m. The work is held in a natural position at the waist line so



The Van Norman Power Reamer in Operation

that the reamer enters and follows through one or both bearings in a straight line. The work is withdrawn from the reamer while it is still turning, thus leaving no marks on the bushing or bearing. When the reamer has been set for the correct size, the bearing can be reamed in less than a minute. The reaming machine takes reamers from ¼ in. to 1½ in. in diameter.

Motor Transport News

Pennsylvania Seeks to Operate Buses in Ohio

The Pennsylvania Railroad, through F. J. Scarr, its supervisor of motor service, has applied to the Commission of Public Utilities of Ohio for authority to operate motor buses in passenger service between Cadiz, O., via Jewett to Uhrichsville (approximately 34 miles), this being the first highway route on which the company has sought to operate in Ohio.

Central of New Jersey Forms Bus Subsidiary

The Jersey Central Transportation Company, a corporation formed to operate motor buses in New Jersey and which is a subsidiary of the Central Railroad of New Jersey, has been chartered by the state of New Jersey. Headquarters are at Jersey City. All officers are likewise officers of the railroad. Directors are: W. G. Besler, R. B. White, C. H. Stein, S. T. Dickerson and W. A. Barkalow.

Alton Secures Its Illinois Permits

The Illinois Commerce Commission has granted to the Alton Transportation Company, highway subsidiary of the Chicago & Alton, authority to operate a bus service between Jacksonville, Ill., and East St. Louis. The commission at the same time dismissed an application of the Prairie State Bus line, the Pioneer Motor Bus Company and the Superior Motor Bus to operate in the same territory on the ground that the existing public utility is willing to furnish necessary service.

The ruling of the commission is in accordance with a recent decision of the state supreme court, which held that existing utilities should be given an opportunity to furnish adequate service before applications of new companies are granted.

The Alton is seeking permits to operate also between Carlinville and Joliet.

Interstate Independent Operator Challenges Constitutionality of Connecticut Tax

A law of the last General Assembly of Connecticut laying a tax upon motor buses doing an interstate business will be passed upon by a constitutional court made up of judges of the United States Court sitting in New Haven on October 28.

A bill of complaint against Connecticut state officials directly responsible for the enforcement of the law was filed by the Interstate Bus Corporation on July 16 last, asking that an immediate injunction be issued against the state officials prohibiting them from enforcing the act, and also asking that the act be declared void as being in conflict with the constitution of the United States concerning interstate commerce and in conflict with the 14th amendment of the constitution on grounds that it subjects the officers and operators of the company to arrest without due process of law.

Hearing on B. & O. West Virginia Bus Application

Thirty per cent of the loss in passenger revenue of the Baltimore & Ohio last year was incurred through operation of local trains in West Virginia, according to the testimony of William E. Lowes, assistant to the passenger traffic manager of the road, before the road commission of West Virginia on the application of the West Virginia Transportation Company for a bus franchise on the Charleston-Parkersburg road in a hearing at Charleston on October 12. The transportation company is a subsidiary of the Baltimore & Ohio.

"Our company recognizes that bus transportation is revolutionizing means of travel," Mr. Lowes said, "and we wish to enter this field of carrying service to protect our interests.

"Although many of our local trains have operated at a loss for some time we have not yet asked relief of the public service commission," Mr. Lowes said.

He added that as a whole the company was making money, but the increase in the passenger service was not satisfactory, particularly in West Virginia. He said that the company plans eventually to extend bus service to the Ohio river division for convenience of local service which would allow the company to speed up its trains.

Protests were made by representatives of other applicants for the Parkersburg franchise.

S. A. E. to Discuss Rail-Highway Co-ordination at Boston Meeting

Rail-highway co-ordination will be one of the subjects to come before the three-day automotive transportation and service meeting of the Society of Automotive Engineers, which is to be held in Boston on November 16, 17 and 18 at the Copley Plaza Hotel. The principal address of the evening will be delivered by Professor W. J. Cunningham, of Harvard University.

Another feature of the meeting in addition to the five technical sessions will be inspection visits to the truck maintenance plant of the Standard Oil Company and to the Massachusetts Institute of Technology in Cambridge.

The meeting will be of particular interest to railway men as well as to automotive men because the operation of motor coaches and motor trucks in conjunction with the railroads is to be discussed at two sessions in five addresses. Speakers include A. P. Russell, president of the New England Transportation Co.; F. I. Hardy, of the Boston & Maine; W. P. Kellett, B. V. Crandall and G. L. Wilson.

How problems in fleet operation are dealt with is to be told by G. T. Seely, of the Chicago Motor Coach Company; C. S. Lyon, of the Motor Haulage Company, and M. B. Morgan, of the Timken-Detroit Axle Company.

Addresses on fleet maintenance and tool equipment in the shop are to be given by F. P. Freeman, of the Public Service Transportation Company, and A. H. Leipert, of the International Motor Company.

A representative of the U. S. Bureau of Public Roads is to tell how heavy vehicles and their tire equipment affect and are affected by paved highways, and representatives of several tire companies are to talk on the fleet operator's tire problems as related to pneumatic, cushion and solid tires.

Pennsylvania Bus Charters Disapproved by Pinchot

Governor Gifford Pinchot of Pennsylvania, on October 8, announced that he disapproved the applications (which had been approved by the Public Service Commission) from the Pennsylvania and the Reading for charters for highway subsidiaries which would operate bus and truck lines on the highways of the state, declaring that such a "blanket monopoly" would be inimical to the rights of the people because the Public Service Commission is not to be trusted to protect these rights. The governor said in part:

"After long and painstaking consideration I decline to approve the charter applications of the Philadelphia & Reading and the Pennsylvania Railroads to operate bus and truck lines for passengers, merchandise and freight over the highways of the state, as recommended by the Public Service Commission.

"I do so for the reason that these applications are the first steps toward securing such a monopoly of bus transportation over the highways of this Commonwealth as the Philadelphia Rapid Transit Company has already secured in Philadelphia. I refuse to be implicated in fastening any such monopoly on the people of Pennsylvania."

Members of the Public Service Commission replied to the governors' charges by pointing out that the charters merely permit the formation of the bus companies, and that before any buses would be permitted to operate, the companies, under the law, must obtain separate certificates of convenience for each line operated, proving the necessity of the service by competent testimony.

The companies applying for charters are the Pennsylvania General Transit Company and the Reading Transportation Company, both formed by officers of the respective railroads.

"At the present writing," Chairman Ainey, of the commission, wrote, "seven applications for operation over specific routes have

been filed in the interest of the Pennsylvania General Transit Company and four in the interest of the Reading Transportation Company. Of the former, three have been approved, one refused and three are pending. Of the latter, all four cases are pending. The commission's refusal, above noted, was in the application for the carriage of persons between Waynesburg and Washington, and its reason therefor was that reasonably adequate service of this character is presently being there furnished by an existing certificate holder."

Agnew T. Dice, president of the Reading, on October 13 issued a statement summarizing his road's attitude but without mentioning the governor. He said in part:

"For some years the railroads have been greatly concerned regarding the inroads made by automobile and motor-coach transportation in their local passenger traffic. Because of this condition, many of the local trains operated by the Reading Company, particularly in branch line territory, have reached a point where the expense is so much greater than the revenue, that their continued operation is an economic waste representing a serious problem for the railroad and the local communities dependent upon it for their convenience and prosperity.

"After a survey covering a period of two years and a study of co-ordinated motorcoach-rail transportation in other states, particularly in New England, three solutions offered themselves:

1. *Extensive reduction of local train service.* The Reading Company, recognizing its responsibility to the isolated communities which are dependent upon connections with the main lines of travel, and the few remaining passengers who would have no other means of transportation, would reluctantly adopt this as a last resort.
2. *Abandonment of local traffic to numerous, small, independent bus concerns.* Manifestly, it is to the public interest not to divorce the local traffic from other business of the railroad and split it into small disjointed units. It is clear that motorcoaches operated by a railroad on schedules co-ordinated with railroad schedules at main line junction points, with interchangeable tickets, use of station facilities, etc., will give the public better service than can be given by any other means.
3. *The continuance of local service by substituting motorcoaches for lightly patronized trains.* This seems to be the natural, economic and business like solution, and the one offered by the Reading Company. The railroad must continue to be the country's main reliance for travel in cases where volume or distance is the chief factor, and it should not be restricted from adopting modern, progressive methods in its effort to continue local transportation in communities it has long served.

"We believe the course outlined in paragraph 3 above best meets our responsibility. In a word, what we have planned to do is to operate motorcoaches paralleling our railroad between station points, partly in substitution for passenger trains, and co-ordinated throughout with our train schedules in order that we may continue to give the public in our territory the reliable year-round transportation which it has been the pride of the Reading to maintain for nearly a century.

"Application was made to bring into corporate existence the Reading Transportation Company and applications are pending before the Public Service Commission for approval to operate 248 miles of motorcoach routes paralleling a portion of our 1,582 miles of railroad. The local passenger trains which we propose to eliminate make 321,163 miles per year. The motorcoaches which we propose to place in service in lieu thereof will make 472,184 miles annually. The gain to the public is evident from these figures."

The signature of the governor to charter grants recommended by the Public Service Commission has in the past been a matter of course and some doubt has been expressed as to the legality of his refusal in this instance. The governor's term expires at the end of the current year, however, and, as he is not a candidate for re-election, it does not appear that appeal will be taken to the courts at this time.

Among the Manufacturers

Appointments of new manager at three of its direct factory branches have been made by the **White Company,** Cleveland, O. **J. C. Rush,** formerly Cincinnati district manager, has become manager of the Detroit district, succeeding J. C. Compton, resigned. **E. B. Bergdoll** has been appointed to succeed Mr. Rush at Cincinnati. **Armin F. Ling** has been appointed branch manager at Toledo, O., succeeding W. M. Kelley, resigned.

Motor Transport Officers

Arthur E. Wagner has been appointed superintendent of the Spokane, Portland & Seattle Transportation Company, with headquarters at Portland, Ore., succeeding H. H. Kech, resigned to enter the service of another company.

X. H. Cornell, superintendent of the terminals of the Chicago & Alton, with headquarters at Chicago, has been appointed vice-president and general manager of the Alton Transportation Company. In 1900 Mr. Cornell left the service of the Chicago, Indiana & Southern (now a part of the New York Central) to go to the Grand Trunk as chief dispatcher. Later, he became trainmaster at Durand, Mich., and in 1904, was appointed master of transportation of the same road, with office at Durand. In December, 1910, he entered the service of the Chicago & Alton and the Toledo, St. Louis & Western (now a part of the New York, Chicago & St. Louis) as inspector of transportation, with office at Chicago, and in April, 1912, was appointed superintendent of transportation at the same place. The following October he was appointed superintendent of transportation of the Pere Marquette, with headquarters at Detroit, Mich., and in June, 1914, he returned to the service of the Alton as master of transportation. In March, 1916, Mr. Cornell was promoted to general superintendent, with headquarters at Bloomington, Ill., and in August, 1918, he was appointed superintendent of terminals at Chicago, which position he was holding at the time of his recent appointment as vice-president and general manager of the Alton Transportation Company, the Chicago & Alton's highway subsidiary.

X. H. Cornell

C. C. King has been appointed mechanical superintendent of the Boston & Maine Transportation Company, with headquarters at Boston, Mass. Mr. King was born at Lincoln, Nebr., on May 6, 1888, and attended grade schools at Kalamazoo, Mich., St. Louis, Mo., and Chicago. In 1900 he began work as an automobile mechanic in St. Louis, Mo., and worked from then until 1918 on various types of passenger automobiles. In that year he resigned as shop superintendent of the Rue Motor Company, Chicago, to become a mechanic for the Chicago Motor Bus Company. A month later he was promoted to mechanical inspector, and six months later to garage foreman. On January 1, 1919 he was promoted to assistant to the shop superintendent and, with the building of a new central shop by the company, was placed in charge of motor rebuilding, where he remained until 1923, when he went with the Yellow Coach & Manufacturing Company to organize its service repair department. This department developed into a school for the training of road service men and Mr. King was in charge. In 1925 he was sent out by the Yellow Coach to organize the servicing of their coaches on such lines as the Calumet Motor Coach Company, the Egyptian Transportation Company and the Chicago, North Shore & Milwaukee. In this position he remained until his appointment as mechanical superintendent of the Boston & Maine Transportation Company, the Boston & Maine's highway subsidiary.

C. C. King